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Resource Inventory of Iceland scallops (Chlamys islandica (O.F. Muller)) in the Jan Mayen and Spitsbergen areas during 1986

Stein Rubach and Jan H. Sundet

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RESOURCE INVENTORY OF ICELAND SCALLOPS (Chlamys islandica (O.F. Muller)) IN THE JAN MAYEN AND SPITSBERGEN AREAS DURING 1986

by

Stein Rubach and Jan H. Sundet

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Tromsø, March 1987

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1. FOREWORD (Page 1)

Because of the widespread interest in Iceland scallops in both the fisheries administration and in the industry, the Fisheries Institute (IFF) at the Tromso University began looking for funding to carry out a resource inventory of Iceland scallops in the Jan Mayen and Spitsbergen areas. Funding was obtained from the Organization for Effective Fisheries Agreements, the Foundation for Fish Discovery and Research, the Norwegian Fisheries Research Council (NFFR) and Tromso University.

The project was initiated during the Spring of 1986 in a co-operative venture between the Fisheries Directorate Sea Research Institute (FHI) in Bergen and IFF, Tromso University. The project is administratively supervised by IFF, Tromso University, under the direction of Professor Kjell Olsen. The project leader is Jan H. Sundet who is also responsible for the professional competence. Day-to-day supervision of the project is in the hands of Stein Rubach.

Three expeditions have been carried out since the project was initiated. The total duration of these expeditions is two months. During the first two expeditions a seining vessel, M/S "Nordfisk", from Bodo was used. For the last expedition the Tromso University research vessel F/F "Johan Ruud" was used.

2. INTRODUCTION (Page 2)

2.1 BACKGROUND

Since 1984 the interest in the Iceland scallop resources at Jan Mayen and in the Barents Sea has been great. This is related to the general deterioration in the traditional fisheries, in that Norwegian fishermen have been forced to seek alternative resources in order to operate the fishing fleet.

During the last two years much has been invested in the Iceland scallop resources off the coast, and in April 1987 some sixteen scallop dredgers with factories onboard were in operation (verbal information from B. Schultz). Further, other vessels from the traditional fisheries are engaged in off-season dredging. In these circumstances it is essential that the actual resources of Iceland scallops be chart ed so that a sensible utilization of these resources can be established.

Other investigations into the Iceland scallop stocks at Bjornoya and Spitsbergen (Wiborg 1963, 1970; Wiborg et al. 1974; Anon 1982) have been carried out. However, there is no knowledge with regard to the size of these stocks and their possible long-term exploitation. The Iceland scallop stocks at Jan Mayen had not previously been investigated.

The IFF/FHI investigations, which were initiated in 1986, are aimed at providing a resource inventory of Iceland scallops in the Jan Mayen and Spitsbergen areas, with regard to distribution, magnitude of stocks and population biology in the long term. This in order to estimate the long-term return for the various stocks.

Due to the size of the potential scallop areas, the 1986 investigation was essentially one of exploration.

2.2 BIOLOGY OF THE ICELAND SCALLOP (Page 3)

The Iceland scallop (Chlamys islandica) belongs to the common scallop family (Pectinidae) and is a cold water species having circumpolar distribution (Ekman 1953). In Norway it is mainly found north of Lofoten, however, individual populations can be found further south (Wiborg and Bohle 1968). In Norwegian waters the largest populations of Iceland scallops can be found at Bjornoya and Spitsbergen. The Iceland scallop can generally be found in locations exposed to relatively strong currents on a bottom which usually consists of sand, shells and rocks (Wiborg 1963). In waters near the coast the main distribution is found in

the 50 to 60 metre range of depth. The largest shell concentrations at Jan Mayen and Bjornoya are found at depths from 70 to 100 metres and at Spitsbergen at depths from 35 to 70 metres.

The Iceland scallop is the northernmost species of scallop and is found in the temperature range from less than 0°C to about 10°C. In the Barents Sea the Iceland scallop is found in temperatures from about -1.5 °C to 8°C (Wiborg 1963).

The Iceland scallop feeds by straining and is attached to the bottom sediment by byssuses. This allows the shells to live in locations with very strong currents. Its nutrients are suspended organic materials which are filtered from the water when it passes the gills. The growth of the Iceland scallop is usually determined by measuring the height of the shell. Shell height is defined as the distance from the shell tip to the opposite edge. Variations in annual growth leave growth zones in the shell (Wiborg 1963) and in the ligament (Johannessen 1973). These zones provide a basis for age determination and calculation of previous growth.

Other investigations have shown that somatic growth does not necessarily correlate with shell growth; there are large variations during the year (Wiborg et al. 1974; Sundet 1979). Some of the factors which influence (Page 4) growth are the availability of nutrients, temperature and current conditions. In addition, somatic growth is also influenced by the spawning season.

The Iceland scallop, along the coast, becomes sexually mature at a shell height of from 35 to 45 mm at an age of some three to five years (Vahl 1981). Spawning takes place in June/July and occurs spontaneously across the whole field (Skreslett 1973). The mechanism which initiates the spawning is not fully understood, however, temperature change is one possibility. The female lays her eggs in the water as does the male when he ejects his milt. For such a breeding strategy to lead to fertilization the number of eggs must be large.

Calculations from the Bergfelt in Balsfjord show that some seventy-five million eggs are laid per square metre. Eggs and larvae are pelagic and the larvae attach themselves to the bottom after a few months. This strategy has a very large potential for the spread of Iceland scallops and it is possible that the recruitment for one field will come from another field. Sundet (1985) indicates the possibility that the Iceland scallop population at Bjornoya was, in part, recruited from stocks near the coast.

3. METHODS, CONDITIONS AND AREAS (Page 5)

3.1 METHODS

To collect the scallops a simple triangular dredge, having a side of one metre, was used. A close-meshed bag was used so that even the smallest shells could be collected. This type of dredge is not used in commercial fishing but is quite suitable for taking samples for scientific purposes. Since the dredge is not as wide as commercial dredges, it is probably more efficient on an uneven bottom. Various towing times were tried and it was established that three minutes was sufficient to record the existence of shells. This also proved to be sufficient time to fill the dredge in the best locations. The towing speed was approximately two knots and the line length was three times the depth. The investigated areas were selected on the basis of previous knowledge with regard to current, depth and bottom conditions. Within each area a network of search stations were established at a distance of from one to four nautical miles from each other, depending on the size of the area. If Iceland scallops were found in commercial quantities, survey stations having a distance of between one to five cable lengths from each other were established. At each station the catch and bottom sediment were recorded.

At a representative number of stations in each area the height of the shells was measured and the catch weighed. The shells were measured to the nearest millimetre and placed in groups of five millimetre increments. Shells

less than 65 millimetres were weighed separately from those which were 65 millimetres or greater. This was done to establish an average number of shells per kilogram for the field in order to later estimate the total stock expressed in tons. Samples for laboratory analyses were marked and frozen immediately. In order to calculate the stock density of the various scallop fields a Benthos underwater camera was used. It photographed 1.5 square metres of the bottom. (Page 6) The number of photographic stations for each field varied with the size of the field. Five to six photographs were taken from each station. The average density of each field formed the basis for calculation of the total stock density.

In the laboratory the sex of the shells was determined and the shell height measured to the nearest millimetre. Both dry and wet weights of the muscle, gonads and other parts were established. As well, samples were taken from the muscle and gonads for later determination of protein, glycogen and lipide content. The age was determined by counting the growth zones in the ligament (Johannessen 1973).

The growth curves for the scallops in the various fields were determined with the help of a computer. The related programme uses data regarding average shell height for each age group and on this basis adjusts the curve in accordance with the von Bertalanffy growth function (von Bertalanffy 1938). The programme also expresses L_{oo} and k on the basis of the observed values. L_{oo} is the largest theoretical shell height and k is a measurement of speed at which the shell height approaches L_{oo}. The root mean square indicates how well the observed values fit the von Bertalanffy growth function.

3.2 CONDITIONS AND AREAS (Page 7)

Table 3-1 clearly shows that there are differences in the sea temperature, both surface and bottom, between the west and east sides of Spitsbergen. The relatively high temperatures found on the northwest side of

Spitsbergen are explained by the West-Spitsbergen current which is a branch of the Norwegian Atlantic current. This current brings relatively warm water to the west side of Spitsbergen.

TABLE 3-1: Sea temperature and salinity for some stations in the Spitsbergen area.

Location	Date	Position		Depth (m)	Temperature °C		Salinity ‰	
		N	E		Surface	Bottom	Surface	Bottom
HOPPEN	4/9-86	80 09.2	14 09.0	33	4.49	4.97	33.98	34.45
HOPPEN	4/9-86	80 17.3	13 27.5	90	4.80	3.07	33.98	34.89
BREIBUGEN	5/9-86	79 53.9	12 22.0	31	4.79	4.78	33.07	33.78
BREIBUGEN	5/9-86	80 01.2	12 30.6	102	4.64	3.93	32.84	33.34
KLOVNINGEN	5/9-86	79 55.5	10 53.4	59	4.62	4.78	32.81	34.24
KLOVNINGEN	5/9-86	79 54.8	10 57.3	37	4.45	4.93	32.81	34.34
SJUBREFLAKET	6/ -86	79 30.8	10 24.4	35	4.15	5.84	32.13	34.83
SJUBREFLAKET	6/9-86	79 30.9	10 04.7	80	4.87	3.44	33.28	34.83
DELLSUND	10/9-86	77 43.8	12 54.8	88	2.51	3.25	33.37	34.65
STORFJORDRENNA	10/9-86	76 16.5	18 43.4	264	4.44	-0.82	34.33	35.07
HOPEN	18/9-86	76 28.2	23 54.2	70	2.14	3.35	34.17	34.81
HOPEN	18/9-86	76 40.2	23 33.1	87	2.45	2.92	34.24	34.87
RYKEYSEBYENE	16/9-86	77 47.4	24 48.0	32	0.84	-0.16	33.01	33.72
OLGASTRETET	17/9-86	78 15.3	28 10.9	320	1.78	-0.07	32.87	34.99
BJORNOYA	13/9-86	74 46.6	19 09.0	95	2.81	2.99	34.47	34.76
BJORNOYA	13/9-86	74 10.8	18 14.5	108	4.92	2.09	34.97	35.02

On the east side of Spitsbergen the East-Spitsbergen current brings cold arctic water south past Kong Karls Land and down towards Hopen. This current explains the low temperatures on the east side of Spitsbergen. At Bjornoya several current systems meet and cause turbulent areas in which cold arctic water is mixed with warm Atlantic water. In such areas one often finds temperature differences within relatively small areas. The difference in (Page 8)
salinity is small between the various areas, however, salinity varies greatly between the surface and the bottom at each station. The low salt content in the surface water is explained by melt water.

TABLE 3-2: Number of dredgings in each of the investigated areas; percentage distribution of dredgings from zero shells to a maximum number of shells per dredging in each area.

Area		No. of dredgings	Percent of dredgings with number of shells							Max. no. shells
			0	1-9	10-49	50-99	100-499	500-999	>1000	
JAN MAYEN		89	23.6	15.7	23.6	5.7	18.0	8.7	8.7	1920
BJORNOYA	XII	358	34.1	17.3	29.5	5.9	9.2	2.8	2.8	2080
HOPEN-EDGEOYA	XI	179	53.1	33.0	12.3	1.1	0.5	0	0	108
STORFJORDEN	X	13	76.9	23.1	0	0	0	0	0	3
SORKAPP-ISFJORDEN	IX	104	38.4	25.5	13.6	4.9	15.8	3.8	0	960
FORLANDSFLAKET	VIII	49	22.4	26.5	36.7	12.3	2.1	0	0	181
FORLANDSUNDET	VII	13	30.8	15.4	23.1	7.8	23.1	0	0	200
MITRAGRUNNEN	VI	17	23.5	35.3	29.4	5.9	5.9	0	0	104
SJUBREFLAKET	V	76	17.1	23.7	28.9	11.9	17.1	1.3	0	504
NORGATT	IV	13	7.8	23.1	15.4	15.4	38.5	0	0	400
KLOVNINGEN	III	17	17.8	35.3	29.4	5.9	5.9	5.9	0	820
BREIBOGEN	II	80	3.3	8.3	23.4	18.3	40.0	6.7	0	736
MOFFEN	I	73	11.0	13.7	20.5	16.4	32.9	5.5	0	900

Table 3-2 summarizes the number of dredgings in each of the investigated areas and shows the percentage distribution of dredgings in the relation to the number of shells found. During the expeditions in 1986 dredgings for Iceland scallops were carried out at 1,141 stations.

TABLE 3-3: Summary of the expeditions and the areas investigated. (Page 9)

Expedition	Period	Areas Investigated
1	28.04 - 12.05.86	Jan Mayen XII. Bjornoya
2	25.06 - 12.07.86	XII. Bjornoya X. Storfjorden XI. Sorkapp - Isfjorden
3	26.08 - 20.09.86	I. Moffen II. Breibogen III. Klovningen IV. Norgatt V. Sjubreflaket VI. Mitragrunnen VII. Forlandsundet VIII. Forlandsflaket XII. Hopen - Edgeoya

(Page 10)

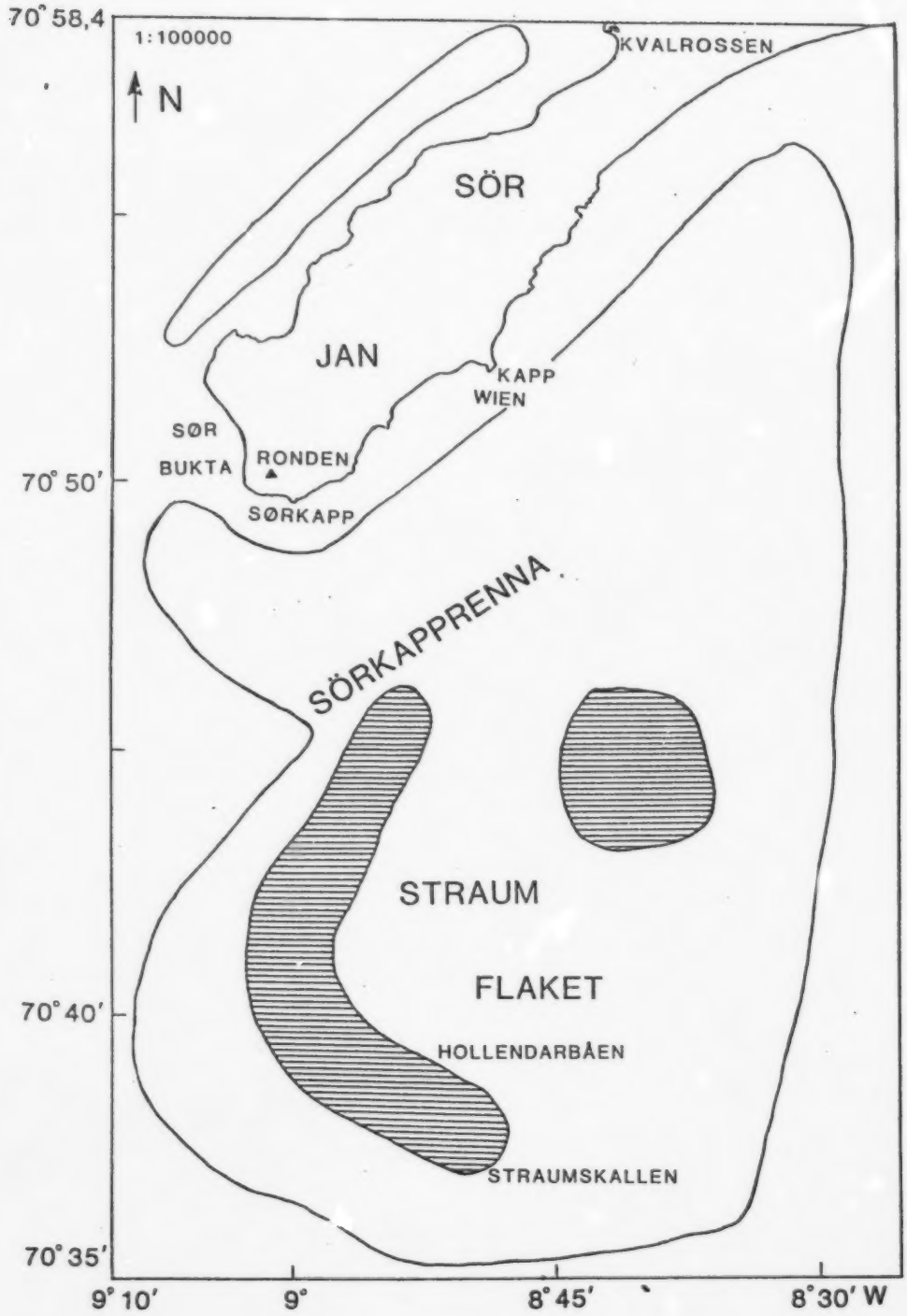

FIGURE 3-1: Map of the areas investigated at Jan Mayen. The investigated areas have been circled. The shaded areas are charted Iceland scallop fields.

(Page 11)

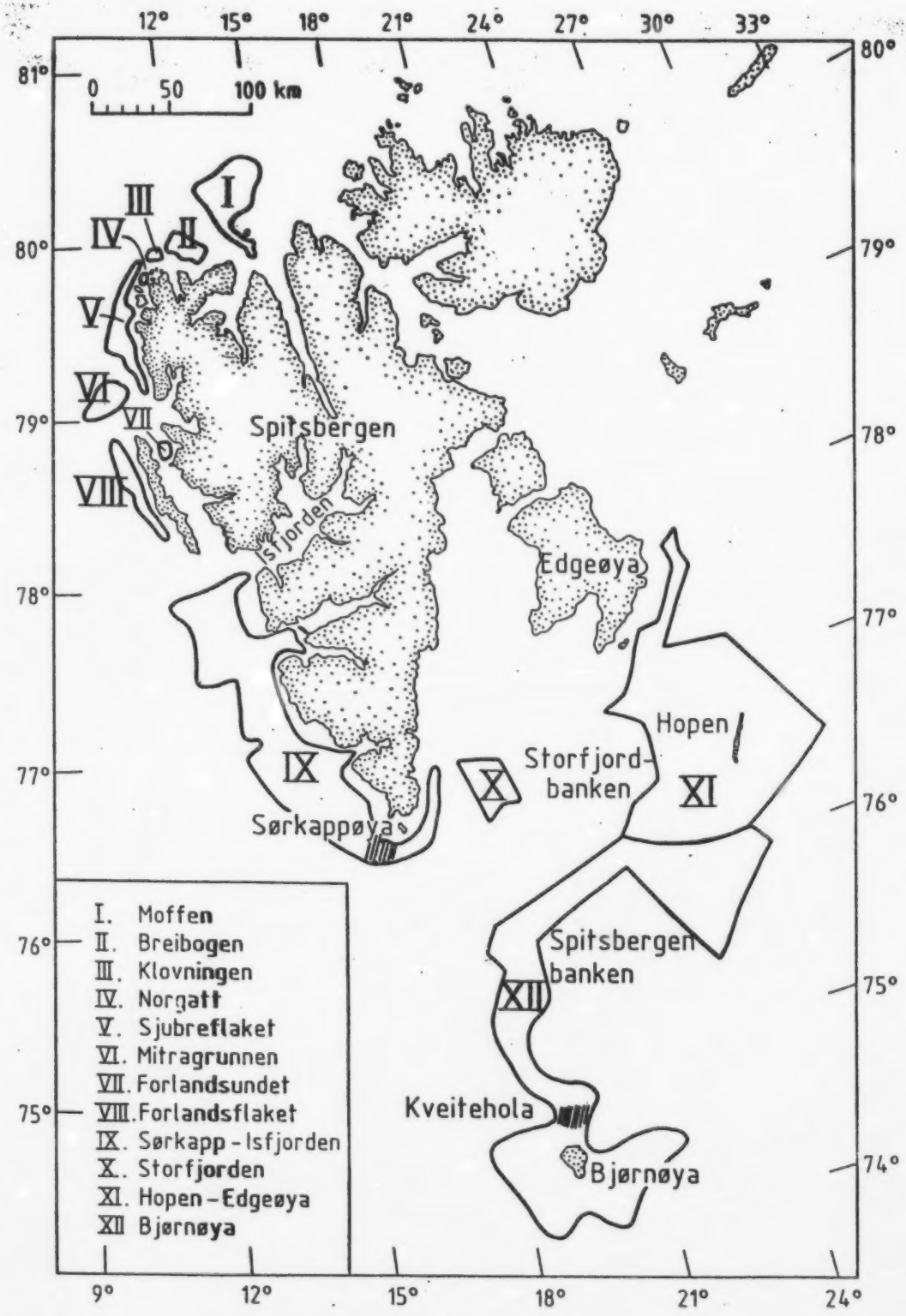

FIGURE 3-2: Map of the areas investigated in the Spitsbergen area. The Iceland scallop fields on the north and northwest side of Spitsbergen are circled, while the fields north of Bjornoya and near Sorkapp are shaded.

4. FINDINGS (Page 12)

Due to the size of the investigated areas and the large number of dredging stations, only the findings from those fields which are most promising are presented in this report. In the Jan Mayen and the Spitsbergen area the investigation involved a total of 1,141 dredging stations. Of these Iceland scallops were found in some 65%. Most of the recordings had such a low density of Iceland scallops that they were of no significance from a harvesting point of view. However, during our 1986 investigation, we found some fields where the shell density and the field circumstances in general made them distinctly promising.

The attached Table 2 shows the position of the dredging stations as well as depth, bottom substrate/bottom fauna and number of shells. For photographic stations the number of shells are shown in terms of shells per square metre.

4.1 JAN MAYEN (Figure 3-1)

Eighty-nine dredgings were carried out at a depth of from 30 to 170 metres. The largest concentrations of shells were found at a depth of from 70 to 100 metres. At Jan Mayen 23.6% of the dredgings provided no shells, 39.3% provided from 1 - 49 shells, 23.7% provided 50 - 499 shells and 13.4% provided over 500 shells. In the field to the west of Straumflaket 1,920 shells were recorded for one dredging. The north-west side of Jan Mayen only yielded an insignificant number of Iceland scallops. The shells in the investigated area had little or no barnacle growth.

The bottom substrate in the investigated areas mainly comprised empty shells, shell sand and some stones with diameters from one to ten centimetres. At depths greater than 100 metres a fair amount of clay and lava ash was found. The bottom is considered suitable for harvesting by dredging.

Two fields were discovered at Jan Mayen which contained most of the (Page 13) recorded Iceland scallops. There were also wide-spread recordings of scallops in other parts of the investigated area. Tests indicated that there was no significant differences between the two main fields with regard to shell height, sex distribution etc., and the information from these two fields was therefore grouped together.

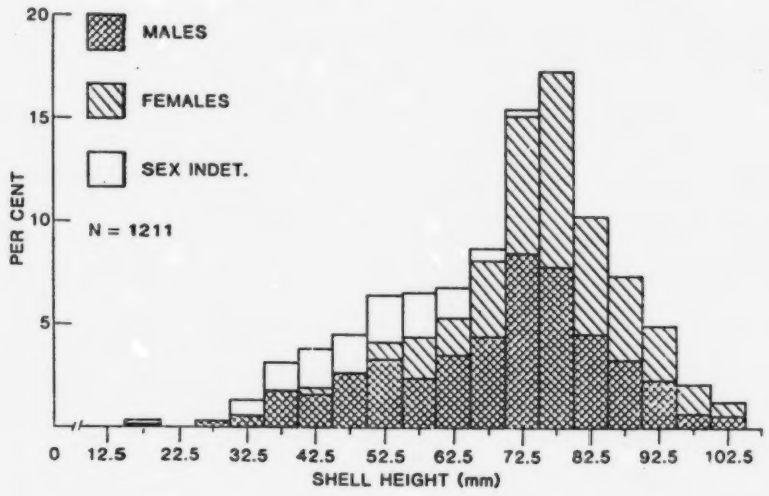

FIGURE 4-1: Shell height distribution of Iceland scallops at Jan Mayen with the proportion of males and females shown in each size group.

The information from Jan Mayen shows that 64% of the shells were over 65 mm and 36% were less than 65 mm. The average height for these two groups was 77.2 mm and 50.1 mm, respectively. The sex distribution was 44.8% males and 55.2% females.

Figure 4-2 shows that it requires, on the average, approximately nine(Page 14) years for the shells to grow to harvestable size. It also shows that the growth is less than the growth near the coast where the shells usually reach 65 mm shell height after 6 to 7 years (Hemmingsen and Sundet 1986).

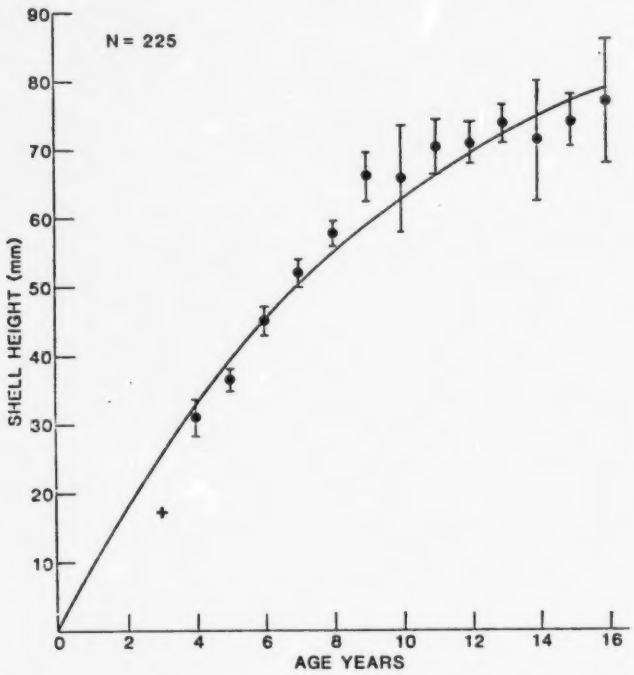

FIGURE 4-2: Growth curve for Iceland scallops at Jan Mayen. Average shell height (95% confidence level) in relation to age. The solid line is the growth in accordance with von Bertalanffy's growth formula. L_{oo} = 99.9 mm, k = 0.0988 and root-mean-square = 5.521.

(Page 15)

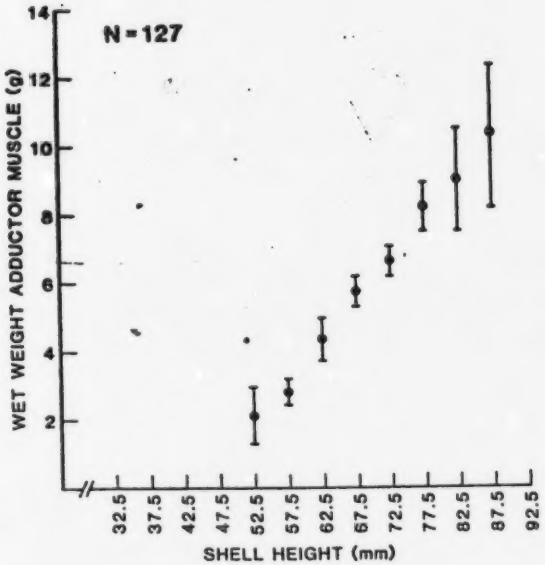

Figure 4-3: Average wet weight of the adductor muscle of Iceland scallops (95% confidence level) related to shell height.

Figure 4-3 shows the wet weight of the adductor muscle in relation to shell height. The figure shows that a shell having a shell height of 65 mm on the average will have a muscle of some 5 grams while a shell of 85 mm will have a muscle of some 10 grams. However, the weight of the muscle varies greatly through the year depending on circumstances such as availability of nutrients and the spawning season (Sundet and Vahl 1981), so that these results only represent a specific point in time.

The greatest incidence of Iceland scallops was recorded west of Straumflaket. The extent of this field is estimated to some 60 km^2. Forty-six photographs were taken of this field which indicated an average density of 9.9 shells per m^2. Measurements of shell height showed that the harvestable part of (Page 16) the stock was 64%, thus the density of harvestable shells was 6.3 shells per m^2. With an average weight of 15 shells per kilogram, the total stock of harvestable shells in the field would be some 25,000 tons.

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Adverse weather conditions prevented photography of the field to the northeast of Straumflaket. This field covered an area of some 15 km^2 and if one assumes that this field had the same density as the other one then this field would have a total harvestable stock of some 6,000 tons.

4.2 BJORNOYA, AREA XII (Figure 3-2)

Three hundred and fifty-eight dredgings were carried out around Bjornoya at a depth of from 37 to 193 metres. A majority of the dredgings were done at a depth of from 70 to 110 metres. This was also where the greatest concentrations of shells were discovered. Of the total number of dredgings in this area, 34.1% had no shells, 46.8% had 1 - 49 shells, 15.1% had 50 - 499 shells and 4% had more than 500 shells. The largest catch during one dredging was 2,080 shells. There was rich barnacle growth on the shells in the Bjornoya area.

In the shallowest parts of this area the bottom substrate was mainly comprised of shell sand, empty shells from various shell species and barnacles. Stones were also found, having a diameter of from 1 to 15 cm as well as some gravel. At depths greater than 120 m clay and large stones having a diameter of over 20 cm were dominating. On the south and southeast side of Bjornoya, at the outer boundaries of the investigated area, difficult dredging conditions were encountered with uneven rock and stone bottom. The bottom conditions of the Bjornoya field are characterized as very good for shell dredging with sand and shell bottom.

Large, good-quality shells were found throughout the investigated area in widespread locations. However, only one major field was discovered to the north of Bjornoya (Figure 3-2). The inventory work of this field was made difficult due to a malfunction of the satellite navigator of M/S "Nordfisk", part (Page 17)

of the time. Due to uncertainties in determination of position, the results from the photographic operations have been omitted since there is no basis for estimating the size of the stock.

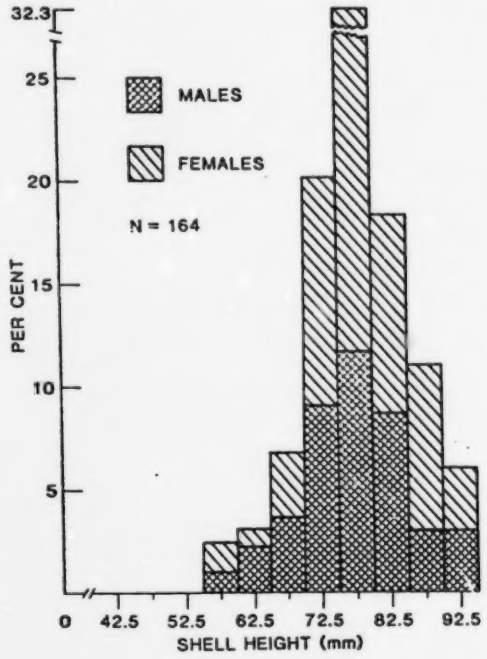

FIGURE 4-4: Shell height distribution of Iceland scallops at the Bjornoya field with the proportion of males and females indicated for each size group.

Figure 4-4 shows that the shell stocks at the Bjornoya field had (Page 18) relatively large shells. The smallest shells found were 55 mm. 91.5% of the shells were over 65 mm and 8.5% were less than 65 mm. The average height for these groups was 76.6 mm and 60.4 mm, respectively. The sex distribution was 56.1% females and 43.9% males.

Due to the small spread in the age determining samples the observed average values of shell height in relation to age were omitted in Figure 4-5, instead it only shows the growth curve according to von Bertalanffy.

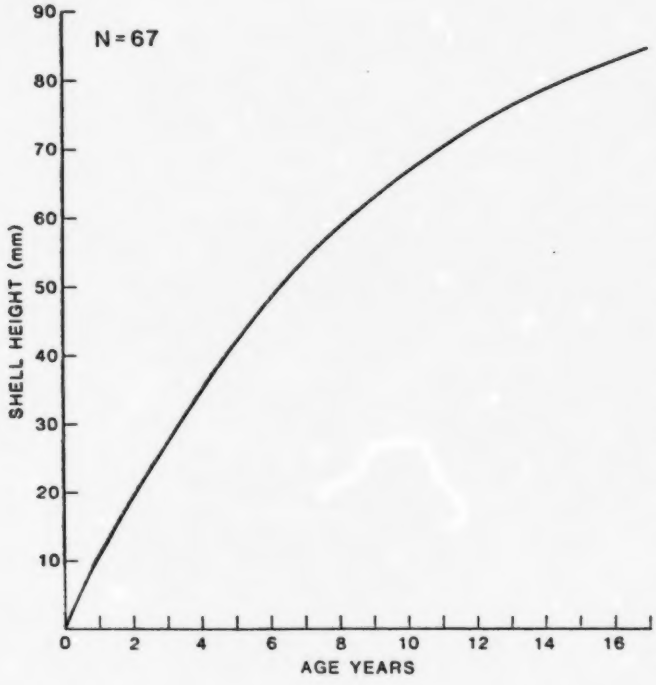

FIGURE 4-5: Growth curve for Iceland scallops at the Bjornoya field calculated from von Bertalanffy's equation. L_{oo} = 100 mm, k = .110, root-mean-square = 6.160.

The growth curve for the Bjornoya field correlates well with the (Page 19) findings of Wiborg (1970) and Wiborg et al. (1974) from some locations around Bjornoya. The figure shows that it will take an average of nine years to produce a shell with a shell height of 65 mm.

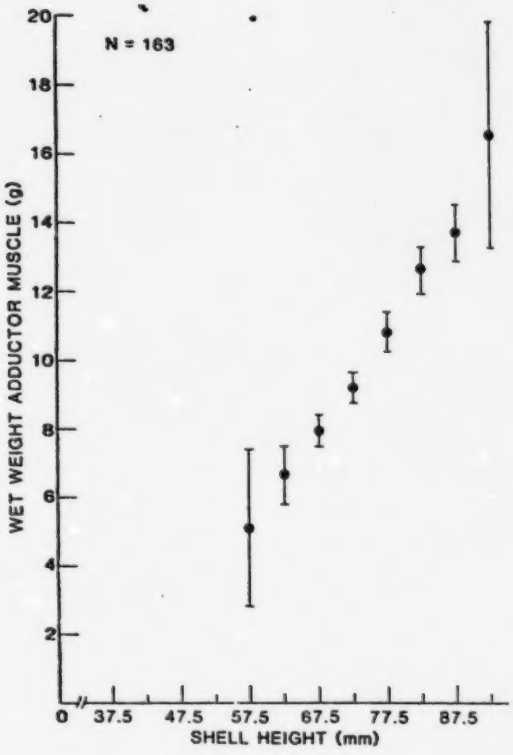

FIGURE 4-6: Average wet weight of adductor muscle in Iceland scallops (95% confidence level) in relation to shell height for the Bjornoya field.

Figure 4-6 shows that the relationship of muscle weight to shell height is larger than in the shells found at Jan Mayen. Sixty-five millimetre shells had on the average a muscle weight of some 7 grams and 85 mm shells had a (Page 20) muscle weight of some 13 grams.

4.3 HOPEN-EDGEOYA, AREA XI (Figure 3-2)

One hundred and seventy-nine dredgings were carried out in this area. Of these, 53.1% produced no shells. No scallop field of commercial value was recorded in this area. The maximum catch in one dredging was 108 small shells. Generally the shells were small in this area and they showed little barnacle growth.

The bottom and currents in this area should provide good conditions for Iceland scallops. A possible reason for the scallops not having established themselves in greater numbers may be the low temperature caused by the East-Spitsbergen current, or that the current is of such character that it makes impossible any spread to the northeast.

4.4 STORFJORDEN, AREA X (Figure 3-2)

Thirteen dredgings were carried out in this area at a depth of from 63 to 150 metres. Iceland scallops were only found in three of these dredgings and the maximum was three shells. The whole area was characterized by a poor bottom with clay and sometimes large stones. The area is of no harvesting interest.

4.5 SORKAPP-ISFJORDEN, AREA IX (Figure 3-2)

One hundred and eighty-four dredgings were carried out in this area at depths from 37 to 160 metres. The largest shell concentrations were discovered at depths from 60 to 100 metres. In the area 36.4% produced no scallops, 39.1% produced 1 - 49 shells, 20.7% produced 50 - 499 shells and 3.8% produced over 500 shells. Maximum number of shells in one dredging was 960 (Page 21) shells taken from the Sorkapp field (Figure 3-2). Dispersed findings of shells were recorded over the whole area. Many of the shells had barnacle growth, however, not to the same extent as around Bjornoya. On the average the shells from this area were slightly smaller than those found around Bjornoya.

The bottom conditions varied greatly and were difficult in some locations. Stones, having a diameter of over 10, and clay dominated the bottom substrate. There were also many high ridges and valleys, shells and gravel. The Sorkapp field comprised mainly shell sand, coarse gravel and some stones having a diameter of from 10 to 20 cm. The dredging conditions in this field were generally considered good.

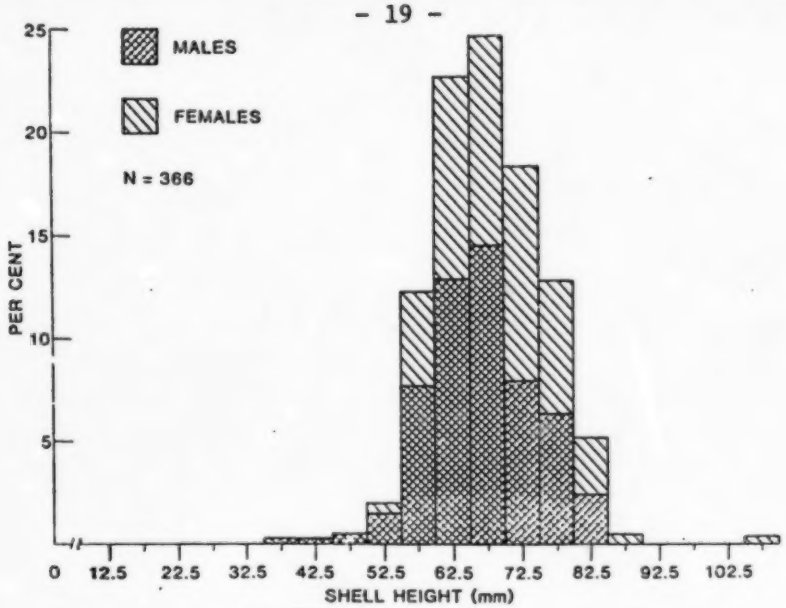

FIGURE 4-7: Shell height distribution of Iceland scallops at the Sorkapp field with the proportions of females and males in each size group.

The shell height measurements from the Sorkapp field showed that (Page 22) 50.6% of the shells were over 65 mm and 49.4% were less than 65 mm. The average size of these two groups was 71.5 mm and 58.9 mm, respectively. The sex distribution was 45.8% females and 54.2% males.

Figure 4-8 shows that on the average it takes some 11 - 12 years to produce a shell with a shell height of 65 mm. The curve for shell growth in this area indicates a slower growth in the Sorkapp field than at Jan Mayen and Bjornoya.

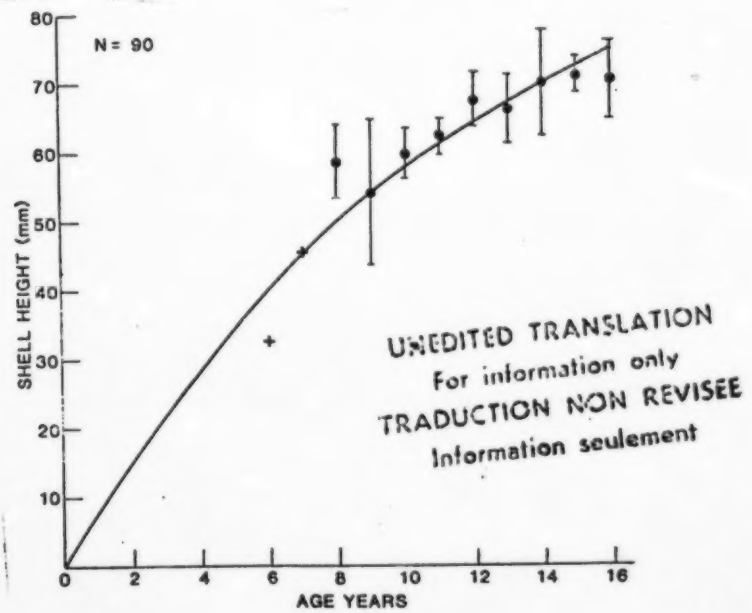

FIGURE 4-8: Growth curve for Iceland scallops from the Sorkapp field. The shell height is plotted against age and the level of confidence is 95%. The solid line indicates von Bertalanffy's growth function, in which L_{oo} = 100 mm, k = .0876. The root-mean-square for the function = 3.588. + = one observation.

Figure 4-9 shows that the ratio of muscle weight to shell height is (Page 23) significantly less in the Sorkapp field than at the Bjornoya field. At Sorkapp a 65 mm shell has an average size muscle of some 5 grams and a shell of 85 mm has a muscle of some 10.5 grams. The ratio for the Sorkapp and Jan Mayen fields is approximately the same even if the samples from Jan Mayen were taken at a different time of the year.

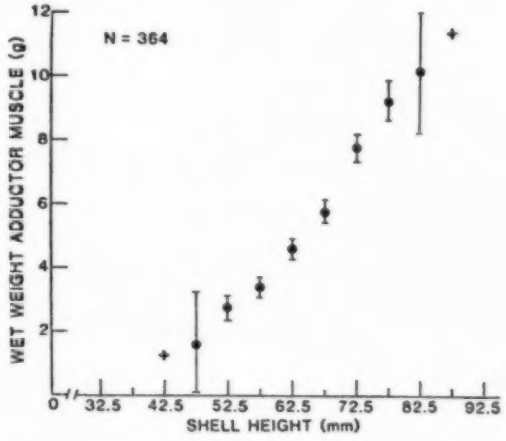

FIGURE 4-9: Wet weight of adductor muscle (95% confidence level) in relation to shell height for the Sorkapp field. + = one observation.

On the basis of information from the inventory stations, the Sorkapp field was calculated to have an area of some 85 km^2. One hundred and twenty bottom photographs were taken in this field and they showed an average of four shells per m^2. With 50.6% of the shells larger than 65 mm the harvestable size shells were 2.02 shells per square metre. With an average of 15 shells per kg this amounts to a harvestable stock of some 11,400 tons of Iceland scallops in the Sorkapp field.

4.6 FORLANDSFLAKET, AREA VIII (Figure 3-2) (Page 24)

Along the west side of Prins Karls Forland 49 dredgings were carried out at depths from 31 to 138 metres. 22.4% of the dredgings produced no scallops, 75.6% produced 1 - 49 shells and 1 dredging produced 101 shells.

The dominating bottom sediment was stones with a diameter of over 20 cm, empty shells and barnacles.

The area was judged to be of little harvesting interest and no measurements or estimates were made.

4.7 FORLANDSUNDET, AREA VII (Figure 3-2)

Thirteen dredgings were made in the northern part of Forlandsundet at depths from 30 to 70 metres. 30.8% of the dredgings produced no shells, 38.5% produced from 1 - 49 shells and 30.7% produced over 50 shells, with a maximum of 200 shells in one dredging.

The bottom mainly comprised stones with a diameter of 2 - 15 cm, some clay, empty shells and barnacles.

Because of the lack of shells this field was evaluated as being of no harvesting interest.

4.8 MITRAGRUNNEN, AREA VII (Figure 3-2)

Seventeen dredgings were carried out at a depth of 43 to 143 metres. 23.5% produced no shells, 64.7% produced 1 - 49 shells and 11.8% produced over 50 shells (maximum was 104 shells).

All the dredgings contained stones having a diameter larger than 20 cm. The bottom in the whole area was uneven and stony and the field was not considered suitable for harvesting.

4.9 SJUBREFLAKET, AREA V (Figure 3-2) (Page 25)

Seventy-six dredgings were carried out at Sjubreflaket and Danskoyflaket at depths from 26 to 96 metres. 17.1% of the dredgings produced no

shells, 52.6% produced 1 - 49 shells, 29% produced from 50 - 499 shells and 1.3% produced over 500 shells with a maximum of 504 shells. Barnacles were found on many shells.

The bottom in the area comprised mainly large stones with a diameter of over 20 cm, some smaller stones with diameters from 3 - 10 cm, barnacles and empty shells. The harvesting conditions on this field were generally good with the exception for certain parts of the southern field where the bottom was uneven and stony.

The shell height was measured on 736 scallops, of which 64% were larger than 65 mm and 36% were less than 65 mm. The average shell height for these two groups was 71.2 mm and 59.1 mm, respectively. No age determination was carried out nor were other laboratory tests.

Twenty-nine photographs of the bottom were taken and these produced an average density of 4.2 shells per square metre. Shell height determinations showed that 64% of the shell stocks were over 65 mm; this means an average density of harvestable shells of 2.7 shells per square metre. There were some 18 shells in harvestable catches per kilogram on the average for this field. The field was estimated to have an area of some 300 km^2. The harvestable stock is on this basis estimated to be 45,000 tons of Iceland scallops. However, it must be noted that large parts of this field are in a protected area.

4.10 NORDGATT, AREA IV (Figure 3-2) (Page 26)

Thirteen dredgings were made at depths from 24 to 116 metres. 7.6% produced no shells, 38.5% produced from 1 - 49 shells and 53.9% produced 50 - 400 shells with a maximum of 400 shells. The shells were to a major part covered by barnacles.

The bottom substrate comprised small stones with a diameter of 3 to 15 cm, empty shells and some barnacles. The bottom conditions were favourable

for dredging. The shell height was measured on 146 shells. Of these, 60% were over 65 mm and 40% were less than 65 mm. The average shell height for these two groups were 69.3 and 60.1 mm, respectively. No laboratory analysis was carried out.

The extent of the field was calculated to be 55 km^2. Seventeen photographs were taken and these provided an average density of 6.75 shells per m^2. Sixty percent of the shells were over 65 mm and this provides a density of harvestable shells of 4.05 per square metre. On the average there were 20 shells over 65 mm per kilogram and this means a total harvestable stock of some 11,100 tons. All of this field is located in a protected area.

4.11 KLOVNINGEN, AREA III (Figure 3-2)

Seventeen dredgings were carried out at depths from 32 to 74 metres. 17.6% of the dredgings produced no shells, 64.7% produced 1 - 49 shells, 11.8% produced 50 - 499 shells and 1 dredging produced 820 shells. There was a rich growth of barnacles on all shells from this field.

The bottom mainly comprised large stones with diameters from 10 to 50 cm, some empty shells and rocks. Dredging was difficult in some parts of the field. (Page 27)

The shell height was measured on 245 shells and 93% were over 65 mm. The average size for these was 77.1 mm while the average for shells less than 65 mm was 60.3 mm. No laboratory tests have been carried out. Due to the lack of time during 1986 no bottom photographs were taken and the stock density for this field is unknown. All of this field is located within a protected area.

4.12 BREIBOGEN, AREA II

Sixty dredgings were carried out at depths from 29 to 85 metres, however, the largest shells were found at depths from 40 to 70 metres. In this

area 3.3% of the dredgings produced no shells, 31.7% produced 1 - 49 shells, 58.3% produced 50 - 499 shells and 6.7% produced over 500 shells, with a maximum of 736 shells in one dredging. The shells in this area had a rich growth of barnacles.

The bottom substrate comprised mainly stones with diameters larger than 20 cm, some smaller stones, shell sand, empty shells, barnacles and gravel. The bottom conditions were generally favourable for harvesting by dredging.

Figure 4-10 shows that shells having a shell height of 70 to 80 mm dominate. 82.5% of the shells were larger than 65 mm and they had an average shell height of 73.4 mm. 17.5% of the shells were less than 65 mm and these had an average shell height of 58.1 mm. The sex distribution was 46.9% females and 53.1% percent males. (Page 28)

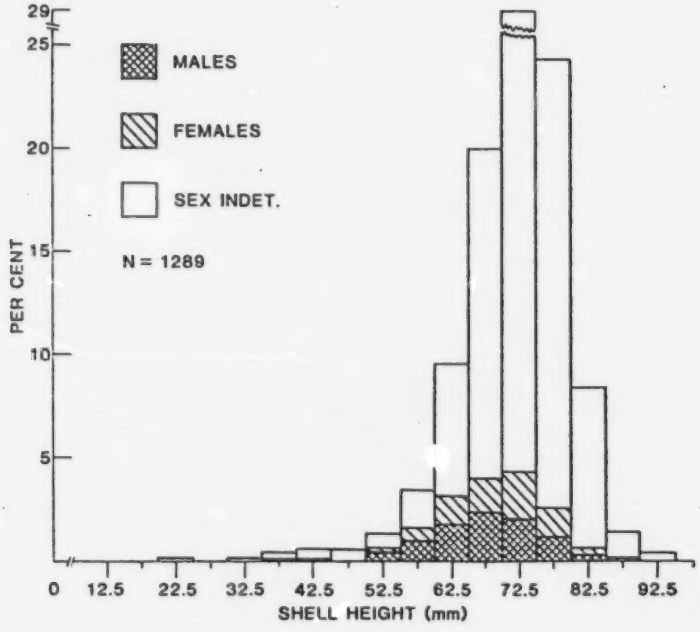

FIGURE 4-10: Shell height distribution of Iceland scallops at Breibogen with the proportion of females and males in each size group.

Since only 39 age determinations were carried out, Figure 4-11 only shows von Bertalanffy's growth equation. The growth curve shows that it would take an average of 13 - 14 years to produce a shell of 65 mm. (Page 29)

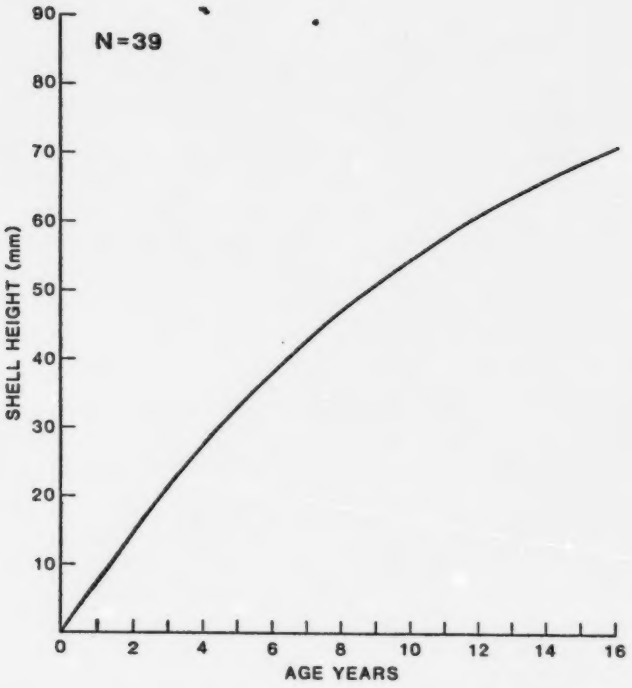

FIGURE 4-11: Growth curve for Iceland scallops at Breibogen. The curve represents shell height and age in accordance with von Bertalanffy's growth equation in which L_{oo} = 95 mm, k = .0850 and the root-mean-square = 8.037.

Figure 4-12 shows that the ratio of muscle weight to shell height is (Page 30) slightly larger than at Jan Mayen and Sorkapp. However, it is less than at Bjornoya. Of the shells from the Breibogen field those of 65 mm had an average muscle weight of some 6.5 grams while those of 85 mm had a muscle weight of some 12.5 grams.

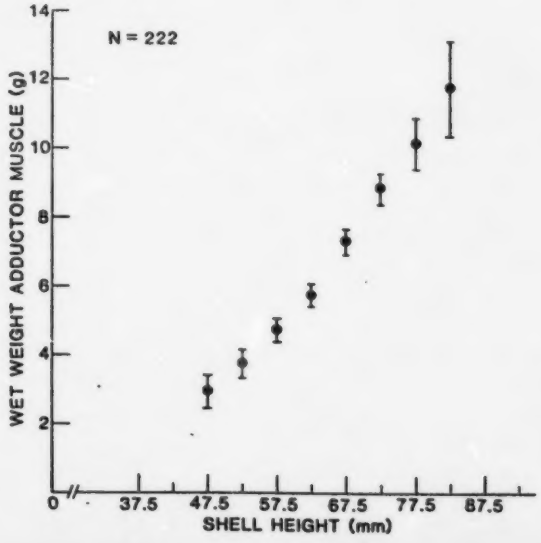

FIGURE 4-12: Wet weight of adductor muscle in Iceland scallops (95% confidence level) in relation to shell height for the Breibogen field.

A total of 48 photographs were taken of the bottom at Breibogen. They showed an average density of 8.9 shells per square metre. With 82.5% of these shells larger than 65 mm this produces an average of 7.3 shells of harvestable size per square metre. The total area of the field was calculated to be some 340 km^2. There was an average of 17 shells per kilogram. Under these circumstances the total harvestable stock of this field was some 146,000 tons of Iceland scallops. However, parts of this field are also within the four nautical mile protected zone so that large parts of the scallop stocks are not harvestable.

4.13 MOFFEN, AREA I (Figure 3-2) (Page 31)

Seventy-three dredgings were carried out at depths from 19 to 87 metres. The largest shell density was discovered at depths from 30 to 70 metres. Of the total number of dredgings 11% produced no shells, 34.2% produced 1 - 49 shells, 49.3% produced 50 - 499 shells and 5.5% produced over 500 shells. The maximum for 1 dredging was 900 shells. All shells had a good growth of barnacles.

The bottom comprised mainly large stones with diameters of over 20 cm. There was also a good deal of sand, clay and empty shells. If one disregards the stones, harvesting by dredging should cause no major problems.

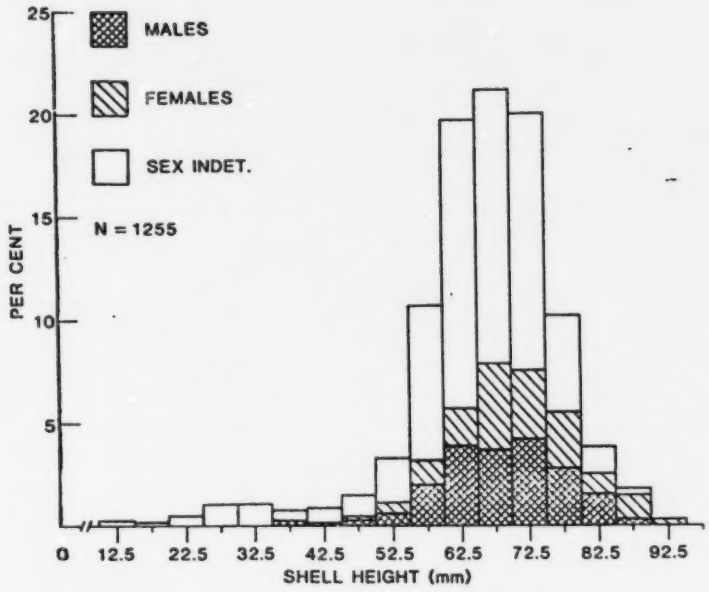

FIGURE 4-13: Shell height distribution of Iceland scallops at Moffen with the portion of males and females shown in each size group. (Page 32)

Figure 4-13 shows that shells with a shell height of 60 to 75 mm dominated in this field. 55.8% of the shells were over 65 mm and 44.2% were less than 65 mm. The average shell height was 71.7 mm and 55.8 mm, respectively. The sex distribution was 46.1% females and 53.9% males.

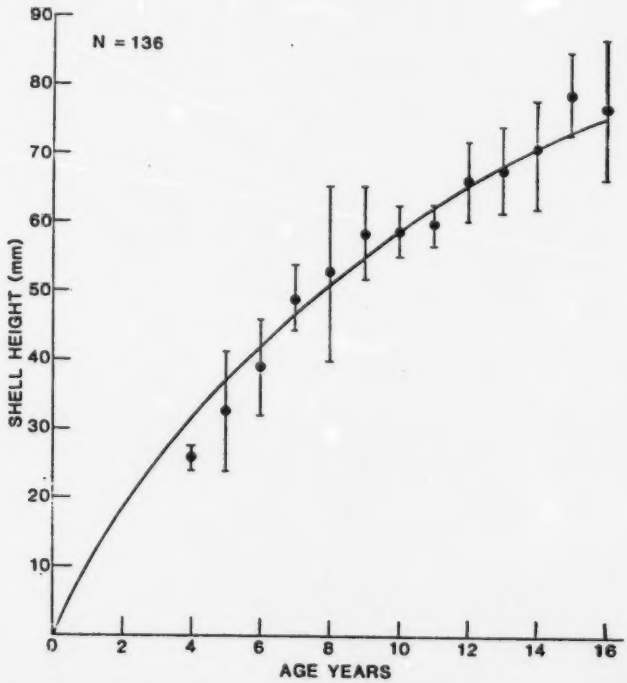

FIGURE 4-14: Growth curve for Iceland scallops at Moffen. The shell height is plotted against age with a confidence level of 95%. The solid curve represents the growth according to von Bertalanffy's growth function in which L_{oo} = 96.5 mm, k = .0942 and the root-mean-square = 2.445.

Figure 4-14 shows that the shell height growth is slightly better at Moffen than at Breibogen. It requires an average of some 12 years to produce a shell having a shell height of 65 mm. This is approximately the same growth rate as that found at Sorkapp.

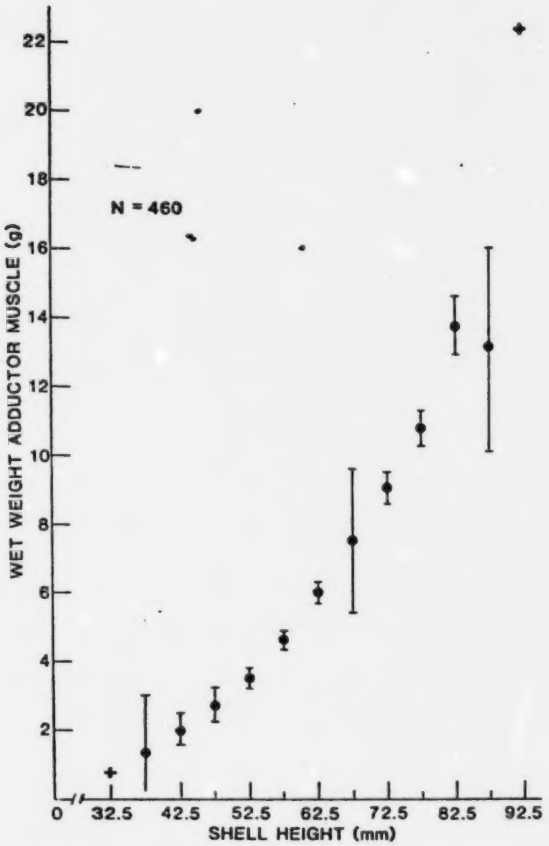

FIGURE 4-15: Weight wet of adductor muscle (95% confidence level) in Iceland scallops plotted against shell height at Moffen. + = one observation.

Figure 4-15 shows that the ratio of muscle weight to shell height is of the same magnitude as that found at Bjornoya. A shell of 65 mm from Moffen

has an average muscle weight of 7 grams and a shell of 85 mm has an average muscle weight of some 14 grams.

A total of 95 photographs were taken of the bottom in the Moffen area. These indicated an average density of 10.84 shells per square metre. The size of the field was estimated to 680 km^2. 55.8% of the shell stocks at Moffen were over 65 mm. This provides an average density of harvestable stock of 6.05 shells per square metre. On the average there were 20 shells per kilogram in this field. From this can be calculated the total harvestable stocks at Moffen which is 205,000 tons of Iceland scallops. (Page 34)

5. DISCUSSION (Page 35)

During the 1986 season, a total of 9 significant Iceland scallop fields were recorded, 2 at Jan Mayen and the rest in the Spitsbergen area. The total harvestable stock, that is Iceland scallop shells of over 65 mm, at Jan Mayen and in the Spitsbergen area was calculated to be 450,000 tons. However, it must be noted that this value is based on information of relatively large uncertainty.

The Iceland scallops are not evenly distributed, but are concentrated in various locations on the fields. A reliable estimate of the average density of Iceland scallops requires a sufficiently large number of photographic stations to cover all classifications of distribution. Since the 1986 exploration programme was so extensive there was insufficient time to photograph and survey the fields properly. The estimates of field size and average shell density are therefore not reliable.

Parts of the scallop fields are not harvestable given today's dredging technology and bad bottom conditions. As well, parts of the fields on the north and west sides of Spitsbergen are located within protected areas. The available shell stocks are therefore less than may be indicated in this report.

With the exception of the fields at Jan Mayen, none of the investigated stocks had previously been explored commercially. These are accumulated stocks comprising mainly older individuals and the production of these stocks is low. By introducing harvesting in a population which mainly comprises older individuals, who have more or less finished growing, an increased production of the stocks will follow (Richer 1977). With regard to the Iceland scallop, one is only commercially interested in sexually mature shells and harvesting will therefore reduce the spawning biomass dramatically.

To ensure a continuing long-term return of these scallop fields it (Page 36) is therefore important that the spawning biomass is sufficiently large to maintain a stable reproduction in the stocks.

If one assumes that the Iceland scallop stocks off the coast become sexually mature at a shell height of 45 - 50 mm, the shell height distribution of the populations in the Spitsbergen area would indicate that these are comprised of sexually mature individuals only. The shell height distribution at Jan Mayen shows a more even distribution over all sizes. The cause for this difference is probably that the shells at Jan Mayen reproduce more evenly than those at Spitsbergen.

On the basis of the skewed shell height distribution from the Spitsbergen area it may appear as if there was no reproduction in the scallop stocks each year. One reason for this may be that the younger age groups may migrate into these fields. In any case the information now available is insufficient for any firm conclusions.

Jan Mayen and Bjornoya stood out as the areas with the best shell growth. In these areas the Iceland scallop reaches an average harvestable size after 9 years while those on the west and north side of Spitsbergen require 11 to

14 years to grow to this size. The reason for this difference may be more favourable temperatures throughout the year and/or longer growth periods at Jan Mayen and Bjornoya.

Jan Mayen is distinctive in that it shows the poorest muscle return in relation to shell height. This condition may be explained by the samples from Jan Mayen and those from the north and west side of Spitsbergen having been taken at different times of the year. The samples from Bjornoya and Jan Mayen were, however, taken at the same time of the year.

The reason for this difference may be genetic in nature or the (Page 37) nutrition conditions at Jan Mayen may be poorer than at Bjornoya.

With regard to administration and estimates of a long-term return from the Iceland scallop stocks we have today little or no experience to rely on. Thus, there is a total lack of knowledge regarding the effect of harvesting on the Iceland scallop stocks, including the sensitive echo systems at Jan Mayen and Spitsbergen. Nor is there any knowledge regarding the mortality of harvested scallops given existing harvesting technology.

Iceland has for many years harvested local Iceland scallops using the same equipment as the Norwegian shell dredgers. Their harvesting strategy is to annually harvest 10% of the harvestable stock and when the catches drop dramatically the fields are protected until they again provide sufficient return (personal message from H. Eriksson).

The results of this study appear to indicate that the Iceland scallop populations at Jan Mayen and Spitsbergen are of such a magnitude that they may form the basis of important operations in the future. We know that the Iceland scallops at Bjornoya and Spitsbergen are partly covered by barnacles. This means problems with regard to production and most of the barnacle covered shells are therefore thrown overboard, unprocessed and dead.

In order to administer these resources responsibly, one must ensure that there is control of the harvesting from these stocks. Accordingly, it may be necessary to require the shell fishermen to keep daily records of catch.

6. SUMMARY

This project was initiated in 1986 as a co-operative venture between (Page 38) IFF, Tromso University and Bergen. The purpose of the project was to inventory the stocks of Iceland scallops at Jan Mayen and in the Spitsbergen area with regard to extent, size and population biology.

Three expeditions were carried out in 1986, having a total duration of two months. During the first two expeditions a leased vessel was used, M/S "Nordfisk" of Bodo, while during the last expedition the University research vessel, F/F "Johan Ruud", was used.

The scallops were collected using a triangular dredge with a side of 1 metre. The population density of the fields was calculated on the basis of underwater photographs taken with a Benthos underwater camera.

Two Iceland scallop fields were discovered at Jan Mayen. The harvestable stocks at these fields was calculated to some 31,000 tons of scallops. However, these stocks were extensively harvested during 1986. Barnacle growth was limited in the Jan Mayen area.

One field was discovered at Bjornoya, however, due to technical problems the size of these stocks was not determined.

On the west and north sides of Spitsbergen six Iceland scallop fields were discovered. The total harvestable stocks of these fields were estimated to be a little over 400,000 tons. Part of these Iceland scallop stocks are, however, within protected areas. The Iceland scallops in the Spitsbergen area were strongly overgrown with barnacles; this will cause production problems.

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8. ATTACHMENT

TABLE 1: Codes for bottom substrates and organisms used in Table 2 (Page 42) following:

BOTTOM SUBSTRATE	CODE	BOTTOM ORGANISMS	CODE
Stones 0 ≥ 10 cm	1	synaptid_s	5
Stones 0 ≤ 10 cm	11	sea urchins	8
Coarse gravel	9	corals	26
Gravel	12	sponges	15
Limestone sand	6	hydrozoans	19
Rocks	13	starfish	21
Clays	3	snails	18
Lava ash	16	limestone algae	17
Empty scallop shells	4	various algae	22, 25
Various empty shells	2, 28, 29	bryozoans	24
Uneven bottom	27	hermits/crabs	20
		kelp/laminaria	23

TABLE 2. Record of positions, depth, bottom substrate and number of shells for each dredging station. For the photographic stations the number of shells is shown as shells per square metre.

Expedition no. 1 JAN MAYEN

STASJON *STATION*	POSISJON *POSITION* N	W	DYP *DEPTH*	BUNN *BOTTOM*	ANT. SKJELL *# SHELLS*
L52	70 57,5	8 49	85	4	10
L51	70 56,5	8 54	92	3	2
L50	70 55,4	8 58,4	120	3	0
L49	70 54,1	9 02,5	125	3	0
L18	70 55,8	8 33,8	90	1	10
L17	70 54,1	8 31	127	3	1
L19	70 54,2	8 37	97	1	1
L16	70 52	8 36,5	85	1	0
L20	70 52	8 42,9	70	4,1	192
L15	70 50	8 36,3	125	3	0
L14	70 50	8 42	93	1,4	160
L13	70 50	8 48	78	1,4	15
L21	70 50	8 54	33	1,4	0
L24	70 49,4	9 05,8	37	13	0
L25	70 47,8	9 05,8	150	3,12,11	50
L23	70 47,8	9 00	53	7,16	0
L22	70 47,8	8 54	87	7,16	33
L12	70 47,8	8 48	115	1,12	160
L11	70 47,8	8 42	116	1	2
L10	70 47,8	8 36,3	129	1,3	1
L9	70 47,8	8 30	154	3	0
L8	70 46	8 30	142	3	0
L7	70 46	8 36,3	114	3	20
L6	70 46	8 42	104	11	70
L5	70 46	8 48	89	11,4	0
L4	70 44	8 47,2	56	11	1
L3	70 44,1	8 41,1	86	11,12	1280
L2	70 44	8 35,7	104	11,6	1440
L1	70 43,9	8 31	134	11,3	2
L27	70 46	8 55	100	1,3,4	320
L26	70 46,5	8 59,5	172	11,3	2
L29	70 44,3	9 00	148	11	10
L28	70 44,3	8 55	70	7	0
L48	70 42	8 35,5	108	11,3	55
L47	70 41,8	8 42	84	6,4	320
L46	70 41,8	8 48	55	1	0
L36	70 42,4	8 53,8	60	7	0
L35	70 42,2	9 00	98	7	1920
L30	70 42,3	9 06	140	3,11	8
L31	70 40,3	9 05,5	144	3,11	0
L34	70 40	9 57,4	85	6,1	160
L45	70 39,6	8 48	56	6,1	0
L44	70 39,7	8 42	80	0	20
L43	70 39,8	8 35,5	125	3,11	10
L42	70 37,8	8 37	130	3,11	10

STASJON *STATION*	POSISJON N *POSITION*	W	DYP *DEPTH*	BUNN *BOTTOM*	ANT. SKJELL *# SHELLS*
L41	70 37,9	8 43	116	3,11	12
L40	70 38	8 47,5	67	6	1
L37	70 37,7	8 54	121	3	20
L33	70 38,3	9 00	122	3,11	20
L32	70 38,2	9 05,7	162	3,11	0
L38	70 35,8	8 54	140	3,11	20
L39	70 35,7	8 47,6	142	3,11	8
KARTLEGGINGSTASJONER JAN MAYEN *INVENTORY STATIONS*					
K34	70 44,1	8 43	80	2	640
K35	70 44,6	8 43	86	2	800
K36	70 45,1	8 42,8	87	1	10
K37	70 45,4	8 41,1	98	1	10
K38	70 44,9	8 40,5	104	2	640
K39	70 44,6	8 39	105	11	480
K40	70 44,2	8 38	100	0	160
K43	70 44,6	8 41,3	98	2	320
K31	70 38	8 49	70	0	0
K32	70 37,5	8 49,5	90	12,7	80
K33	70 37,1	8 50,6	104	3,4	160
K30	70 38,7	8 51,4	70	13	0
K29	70 38,2	8 52	85	7	40
K28	70 37,7	8 53	115	3,4	13
K27	70 38,1	8 55	123	3	160
K25	70 39	8 54	70	3,6	10
K24	70 39,5	8 56,5	70	7,?	17
K22	70 38,7	8 58,5	113	1,3,4	480
K21	70 38,5	9 01	120	3,11	80
K19	70 40	8 58	74	1,7	160
K18	70 40,8	8 58,2	75	1,7	1
K16	70 40,8	9 01	102	1,4	720
K15	70 41,8	9 01,5	103	3,4	240
K13	70 41,7	8 58,5	67	4	0
K12	70 42,1	8 57	83	4	160
K10	70 43	8 59	117	11	1120
K9	70 43,8	8 58,5	110	0	800
K7	70 43,2	8 55,5	92	4	1600
K6	70 44,2	8 54	85	4	1120
K4	70 44,5	8 57	114	3	320
K3	70 43,4	8 55,5	132	4,3	800
K1	70 45,7	8 53,8	66	1	2
K44	70 48,5	8 52	80	1	10
K45	70 49,1	8 49,5	80	1	1
K46	70 50,5	8 45,4	81	13	15
K47	70 51,2	8 43,5	82	13	0

FOTOSTASJONER JAN MAYEN *PHOTO STATIONS*

STASJON *STATION*	POSISJON N *POSITION*	W	DYP *DEPTH*	ANT. # SKJELL/M2 *SHELLS/M2*
F1	70 51.5	8 43	82	0
F2	70 50.5	8 45.5	74	0
F3	70 45	8 55	104	30.9
F4	70 43.5	8 57.5	110	.9
F5	70 42.5	8 59	90	5.7
F6	70 41	9 01	102	12.7
F7	70 39.5	8 59	98	6.8
F8	70 36.5	8 56	90	15.9
F9	70 37	8 52.5	83	4.7
F10	70 44.1	8 41	77	5.0
F11	70 45.2	8 42	98	.7
F12	70 44.3	8 38.5	76	1.0

BJØRNØYA, (Area) område XI

STASJON *STATION*	POSISJON N *POSITION*	E	DYP *DEPTH*	BUNN *BOTTOM*	ANT. SKJELL *# SHELLS*
B1	74 45,5	19 13	113	2,14	6
B2	74 44,5	19 10	98	2,14	480
B3	74 44,5	19 06	92	2	320
B6	74 48,5	19 06	96	2	33
B7	74 48,5	19 03	106	2	8
B8	74 48,5	18 59	116	1,3	104
B9	74 50,7	18 51	98	1,3	0
B10	74 51,5	18 54	102	1,3	60
B11	74 52	18 57	90	1,2	640
B14	74 54,5	18 43	96	2	20
B15	74 53,5	18 42	109	2,13	2
B16	74 52,6	18 40	130	11	30
B17	74 53,63	18 27,64	110	1	10
B18	74 54,35	18 27,64	92	1	0
B21	74 58,94	18 17,86	84	2,1	2
B22	74 56,76	18 16,16	94	13	2
B23	74 55	18 16	117	1	50
B24	75 00,93	18 02,22	110	1	5
B25	75 01	18 03	84	1	0
B27	75 03,6	18 12	81	2	1
B28	75 03	18 10	95	1,7	8
B29	75 04	18 02	110	1,3	60
B30	75 09	18 00	112	13	0
B31	75 11	18 00	87	7	1
B32	75 13	17 56	80	1,7	10
B33	75 12	17 54	94	1,13	15
B34	75 12	17 48	110	1	35
B35	74 52,7	19 10	75	1,13	480
B36	74 54	19 22	70	7	4
B37	74 52,6	19 37	77	1	16
B38	74 51,7	19 50,7	70	2	10
B39	74 45,8	19 39	52	1,14	0
B40	74 45	19 25	83	2,14	11
B41	74 41,2	19 21	54	2 14	1
B42	74 39,45	19 09	59	2,14	0
B43	74 38,2	18 55	67	14,15	0
B44	74 37,2	18 40	67	2,14	1
B45	74 34,5	18 52	51	13	0
B46	74 35,6	18 08	50	11	0
B47	74 36,2	19 24	42	1	0
B48	74 32,7	19 20	53	1	0
B49	74 29,6	19 30	51	7	0
B50	74 31,5	19 43	55	13	0
B51	74 25,5	19 32	62	7	0
B52	74 22,8	19 20	38	7	0
B53	74 15,5	19 28	72	7	4
B54	74 16,4	19 13	64	7,14	1
B55	74 12,3	19 19	60	7	0
B56	74 13	19 03	67	7	0
B57	74 09	18 59	67	7	0

STASJON *STATION*	POSISJON N *POSITION*	E	DYP *DEPTH*	BUNN *BOTTOM*	ANT. SKJELL *# SHELLS*
B58	74 11,5	18 44	54	7	0
B101	74 40	18 30	100	0	7
B102	74 36,5	18 28	102	7	0
B103	74 33,5	18 16	104	7	3
B104	74 37	17 50	108	1	0
B105	74 39,5	17 40	117	1	0
B106	74 35,5	17 34	126	0	0
B107	74 33,5	17 46	113	1	0
B108	74 30	17 41	121	1	0
B109	74 30	17 56	133	4	0
B110	74 30	18 10	90	3,7	2
B111	74 26,3	18 08	98	1,7	1
B112	74 25,5	17 58	124	1	0
B113	74 22,5	18 11	117	1	3
B114	74 22,7	18 15	98	1	0
B115	74 23,2	18 18	82	7	1
B116	74 18,7	18 20	91	14,7	14
B117	74 18,8	18 16	100	7	10
B118	74 19	18 12	129	7	19
B119	74 15,4	18 10	128	1	0
B120	74 15,2	18 14	100	4	5
B122	74 12	18 18	92	4	33
B123	74 11,3	18 16	103	1	275
B124	74 09,8	18 13	121	1	0
B125	74 09,5	18 26	120	7	38
B126	74 11	18 30	103	7	15
B127	74 07,8	18 38	69	7	60
B128	74 07	18 30	100	7	20
B129	74 05,5	18 25	128	1,7	0
B131	74 16,8	19 56	102	13	0
B140	74 03	18 36	100	1	20
B141	74 04,7	18 40	85	7	54
B142	74 04	18 50	90	7	800
B143	74 02	18 51	100	1	11
B144	74 00	18 51	110	1,7	0
B145	74 12	19 30	96	7	5
B146	74 09,6	19 32	108	7	61
B147	74 07,7	19 33	103	7	22
B148	74 04	19 35	106	1,7	18
B149	74 06	19 42	78	1	8
B150	74 05,7	19 48	98	1	16
B151	74 06,7	19 52	86	0	480
B152	74 13	19 58	100	2	50
B153	74 17,6	19 43	80	7	28
B154	74 19,5	19 30	70	0	0
B155	74 22,5	19 43	80	7	5
B156	74 20,8	19 55	100	7	9
B157	74 24,5	20 01	98	1,7	22
B158	74 27	19 50	69	1,7	0
B159	74 30,5	19 59,8	80	1,14	15
B160	74 27,8	20 10	101	1	50
B161	74 31,5	20 14	101	1	42

STASJON STATION	POSISJON N POSITION	E	DYP DEPTH	BUNN BOTTOM	ANT. SKJELL # SHELLS
B162	74 34,5	20 04	77	7	11
B163	74 37 5	20 17	86	7	46
B164	74 34	20 25	107	7	28
B165	74 35	20 40	100	3,12	20
B166	74 31	20 45	100	12,4	10
B167	74 28,9	20 57	97	12,3	0
B168	74 25	21 01	97	1	45
B169	74 27,5	21 14	100	1	37
B170	74 27,5	21 06	193	7	14
B171	74 31,8	21 04	91	1,14	19
B172	74 31,5	21 12	100	3,1	15
B173	74 24,5	22 12	120	0	5
B174	75 13	22 53	88	3,1,2	8
B175	75 11	22 56	87	1,3	5
B176	75 10	23 00	102	1,3	1
B177	75 07	22 46	84	1,3	5
B178	75 08	22 45	82	2	11
B179	75 05	22 36	83	2	15
B180	75 00	22 33	88	6	12
B181	74 56	22 19	85	1,2	0
B182	74 53	22 09	87	1,2	0
B183	74 55	21 53	100	1,2	1
B184	74 54	21 41	90	1,3	11
B185	74 52	21 28	90	1,3	23
B186	74 50	21 15	89	1,2	22
B187	74 47,3	21 05	87	1,2	19
B188	74 44	20 56	77	1,2	22
B189	74 46	20 25	55	1,2	0
B190	74 48,6	19 53	63	7	3
B191	74 48,5	19 40	77	7	35
B192	74 49,7	19 27	80	7	40
B193	74 40,5	18 55	90	1,7	53
B194	74 41,5	18 55	96	1	48
B195	74 43	18 56	104	0	42
B196	74 42,5	18 58	85	0	0
B197	74 41,5	19 00,5	67	2,14	6

Expedition #2

Tokt nr. 2 (area)
BJØRNØYA område XII

STASJON *STATION*	POSISJON N *POSITION*	E	DYP *DEPTH*	BUNN *BOTTOM*	ANT. SKJELL *# SHELLS*
J1	75 16	17 46	82	1, 2	17
J2	75 15, 5	17 40	94	1, 3	86
J3	75 15	17 23	138	1, 3	0
J4	75 15, 40	17 13, 4	100	1, 3	0
J5	75 19	17 38	107	1	18
J6	75 19	17 43	98	1, 4	20
J7	75 19	17 48	75	1, 2	80
J8	75 19	17 52	63	1, 4	3
J9	75 19	17 57	58	1, 5	0
J10	75 19	18 02	66	6, 1, 2	0
J11	75 19	18 06	59	7, 5	0
J12	75 20	18 20	49	7	0
J14	75 20	18 52	51	5	0
J15	75 22	18 20	104	3, 1, 4	0
J16	75 22	18 02	78	3, 1, 6, 4	0
J17	75 22	17 48	114	3, 1	41
J18	75 24	17 48	146	3, 1	30
J19	75 24	17 58	101	3, 1	30
J20	75 24	18 12	105	3, 1	58
J21	75 28, 50	17 50	105	13	0
J22	75 29, 50	18 02	125	3	0
J23	75 28	18 10	104	3, 1	36
J24	75 27, 40	18, 18	59	1	0
J25	75 30, 20	18 24, 10	106	1, 3	6
J26	75 31, 75	18 18, 50	140	1	0
J27	75 32, 75	18 29	109	1, 3	20
J28	75 30	18 34	100	1, 3	71
J29	75 28, 50	18 32	104	1, 3	20
J30	75 28	18 32	110	1, 3	5
J31	75 28, 30	18 49	98	1, 3	31
J32	75 30, 50	18 50	90	14, 4	19
J33	75 30, 50	18 42	102	4	4
J34	75 32	19 32	101	3, 1	0
J35	75 32	18 48	86	4	85
J36	75 32	18 55	65	4, 1	35
J37	75 31	19 34	63	4	3
J38	75 32	19 32	90	4, 1	2
J39	75 34, 30	19 30	90	4	20
J40	75 35	18 54	92	4	120
J41	75 34, 50	18 45, 50	124	0	0
J42	75 35	18 38, 50	126	0	0
J43	75 38, 20	18 31	130	0	0
J44	75 38, 20	18 40	85	1	20
J45	75 38 20	18 48	95	4	80
J46	75 41	18 30	115	3, 1	0
J47	75 42, 50	18 42, 50	87	7	0
J48	75 45, 50	18 30	72	1	6
J49	75 45	18 25	92	8	1

STASJON STATION	POSISJON N POSITION	E	DYP DEPTH	BUNN BOTTOM	ANT. SKJELL # SHELLS
J50	75 44,50	18 20	102	8	10
J51	75 45,50	18 10	130	1,3	0
J52	75 48,50	18 20	97	1	26
J53	75 47,50	18 30	84	4,1	36
J54	75 49	18 45	74	4,1	15
J55	75 50	18 35	102	1,3	46
J56	75 51	18 27	114	1,3	0
J57	75 54	18 35	114	3,11	3
J58	75 53,8	18 43	102	3,11	2
J59	75 52	18 48	94	2,11	95
J60	75 53	19 00	60	1	0
J61	75 55	18 57	105	3,1	0
J62	75 56,8	18 55	127	3,1	0
J63	75 56	19 12	81	1,6	39
J64	75 54	19 15	67	4	2
J65	75 56	19 30	85	1	29
J66	75 57	19 30	107	1,3	3
J67	76 00	19 25	137	1,3	0
J68	75 59	19 40	88	1,3	10
J69	75 57	19 45	79	4	44
J70	75 58	20 02	80,7	3,1,2	12
J71	76 00	19 58	100	1,3	15
J72	76 01,2	20 15	107	0	0
J73	76 00	20 20	104	1,3	7
J74	76 02,3	20 29,5	96	1,3	0
J75	76 04	20 25,2	114	1,3	0
J76	76 04,5	20 40,2	98	1,3	7
J77	76 02,8	20 45	84	1,3	28
J78	76 04	21 00	79	7,1	124
J79	76 05,5	21 00	100	3,1	0
J80	76 06	21 10	95	1,3	11
J81	76 03,5	21 17,00	42	1	1
J82	76 05	21 35	65	7	12
J83	76 06	21 30	95	7,1	63
J84	76 07,6	21 39	95	7,1	10
J236	76 00	24 55	96	1	1
J237	76 00	24 47	82	3,1	12
J238	76 00	25 04	105	1	0
J239	75 56	25 00	105	1,3	8
J240	75 56	24 53	115	3,1	0
J241	75 56	24 45	102	1	2
J242	75 53	24 34	95	3,1	4
J243	75 53	24 40	100	9	3
J244	75 53	24 47	106	3	0
J245	75 49	24 43	99	3	0
J246	75 49,5	24 35	93	3,1	0
J247	75 49	24 25	96	3	0
J248	75 45,5	24 25	90	3	0
J249	75 47,6	23 45,39	78	3,7	20
J250	75 48,59	23 25,91	72	7	40
J251	75 46,57	25 18,48	74	7	60
J252	75 46	23 00	69	7	41

STASJON *STATION*	POSISJON N *POSITION*	E	DYP *DEPTH*	BUNN *BOTTOM*	ANT. SKJELL *# SHELLS*
J253	75 52	23 04	69	7,1	30
J254	75 54,5	22 45	58	2,14	17
J255	75 56,5	22 25	71	2,14	9
J256	75 51	22 22	54	4	0
J257	75 46	22 25	48	7	0
J258	75 46	22 42	51	1,14	0
J259	75 41	22 24	56	14,4	0
J260	75 41	22 41	54	0	0
J261	75 41	23 00	63	14,7	30
J262	75 41	23 20	75	3,1	0
J263	75 41	23 41	88	3	0
J264	75 41,2	24 00	99	3	0
J265	75 37	23 53	102	3	0
J266	75 36,2	23 36	94	3,1	0
J267	75 36,2	23 17	70	14,4	36
J268	75 36,2	23 00	63	14 4	12
J269	75 36	24 40	56	1,14	0
J270	75 36	22 25	37	1	0
J271	75 36	21 50	50	7	0
J272	75 32	21 34	53	13	0
J273	75 32	22 08	52	7,14	0
J274	75 31	22 30	54	7,14	0
J275	75 31	22 50	70	14,1	60
J276	75 30	23 05	79	14,1	15
J277	75 30	23 25	78	0	0
J278	75 30	23 45	98	7	0
J279	75 30	24 00	114	1	0
J280	75 25	23 52	120	3	0
J281	75 26	23 37	100	3	0
J282	75 26	23 20	80	3	1
J283	75 26	23 00	75	1,14	30
J284	75 22	22 42	51	7	0
J285	75 22	23 10	88	1,3	40
J286	75 22	23 25	93	3,1,6	10
J287	75 22	23 40	112	3,1	0
J288	75 17	23 12	97	3,1	10
J289	75 19	22 55	85	0	0
J290	75 17	22 39	63	7	2
J291	75 14	22 50	88	1,12	0
J292	75 14	23 10	90	1,12	4

INVENTORY STATIONS *FIELD, area*
KARTLEGGINGSTASJONER BJØRNØYAFELTET, område XI

JK39	74 53	19 09	77	7,1	0
JK40	74 53,5	19 09,4	77	7	0
JK41	74 54	19 09,9	74	7	240
JK42	74 54,3	19 10,3	74	7	160
JK43	74 54,8	19 10,5	64	?	0
JK44	74 55	19 10,8	67	7	0
JK45	74 55	19 11	75	7	0
JK46	74 56	19 04	73	7	122
JK47	64 54	19 04	80	7	480

STASJON *STATION*	POSISJON N *POSITION*	E	DYP *DEPTH*	BUNN *BOTTOM*	ANT. SKJELL *# SHELLS*
JK48	74 53	19 04	73	7	240
JK49	74 50	19 04	99	7	144
JK50	74 48	19 04	126	1, 6, 3	140
JK51	74 46	19 04	120	7	16
JK52	74 44, 05	19 06	121	7	30
JK53	74 44, 5	19 07	120	7	20
JK54	74 44, 5	19 08, 5	112	7, 1	20
JK55	74 44, 56	19 09, 39	109	4	0
JK56	74 44, 60	19 12	99	4	240
JK57	74 44, 35	19 13, 37	90	7	320
JK58	74 44, 46	19 16	90	2	2080
JK59	74 45, 24	19 18, 50	101	2	2080
JK60	74 45, 13	19 20	94	6	640
JK61	74 45	19 21	92	6	320
JK62	74 44, 5	19 22, 36	80	6	160
JK63	74 44, 5	19 25	69	7	15
JK64	74 44	19 10	112	4, 8	0
JK65	74 43, 41	19 09, 41	114	8	0
JK66	74 45, 2	19 10	102	4	240
JK67	74 45	19 10	87	4	480
JK68	74 44, 5	19 10, 4	92	4	320
JK69	74 44	19 12, 2	96	4	272
JK70	74 43, 1	19 11	92	4	416
JK71	74 43, 3	19 14	74	4	15
JK72	74 43, 6	19 14	79	4	7
JK73	74 44, 6	19 72, 2	77	4	18
JK74	77 44, 9	19 18	100	4	1280
JK75	74 44, 3	19 24, 7	74	4	96
JK76	74 44, 8	19 24, 8	69	4	6
JK77	74 44, 9	19 29	65	4	0
JK78	74 45, 2	19 28, 2	72	4	30
JK79	74 47	19 30	69	4	0
JK80	74 46	19 23	63	4	48
JK81	74 45	19 21	73	4	30
JK82	74 45	19 18	96	4	128
JK83	74 45	19 16, 24	100	4	480
JK84	74 45	19 13	85	4	400
JK85	74 45	19 10	110	4	20
JK86	74 45	19 06	119	7, 8	10
JK87	74 46, 02	19 05, 97	117	0	0
JK88	74 46, 20	19 07, 84	117	4	0
JK89	74 46, 1	19 10, 1	100	4	1120
JK90	74 46, 2	19 13	92	4	960
JK91	74 46, 7	19 13, 3	94	4	1120
JK92	74 46, 9	19 16, 8	91	4	65
JK93	74 47, 4	19 17	93	4	1280
JK94	74 47, 8	19 17, 2	93	4	1280
JK95	74 52	19 16	90	4	800
JK96	74 49, 8	19 08, 50	97	4	30
JK97	74 06, 5	19 53, 56	94	1, 4	160
JK98	74 07, 40	19 54, 93	93	4, 14	160
JK99	74 08	19 54	84	6, 12	480

STASJON *STATION*	POSISJON N *POSITION*	E	DYP *DEPTH*	BUNN *BOTTOM*	ANT. SKJELL # *SHELLS*
JK100	74 10	19 51	84	0	0
JK101	74 11	19 54	82	1	10
JK102	74 11	19 56, 54	97	1, 2	5
JK103	74 11	19 50	70	1, 12	0
JK104	74 08	19 51	79	1, 12	160
JK105	74 05	19 48	82	0	10
JK106	74 04	19 49	87	14, 4	800
JK107	74 03	19 48	100	4	960
JK108	74 01	19 48	105	4	160
JK109	74 00	19 48	117	0	0
JK110	73 53	19 44, 3	125	0	15
JK111	74 06, 5	19 56	105	5	0
JK112	74 06, 3	19 50	94	7	0
JK113	74 06, 1	19 47, 2	84	7	320
JK114	74 06, 1	19 42, 7	80	1	7
JK115	74 06, 1	19 39	96	0	0
JK116	74 06, 1	19 35	88	0	0
JK117	74 12	18 18, 33	91	13	0
JK118	74 12	18 20	91	13	3
STORFJORDEN, *(area)* område X					
J85	76 32	19 01	150	1, 3	0
J86	76 33	18 33	109	1, 3	2
J87	76 33	18 47	82	1, 3	3
J88	76 36, 8	18 49	80	1, 3	2
J89	76 35, 5	18 57	100	1, 3	0
J90	76 40, 5	19 07	144	0	0
J91	76 40	19 00	112	1, 3	0
J92	76 40	18 50	63	1	0
J93	76 44	18 55	106	1, 3	0
J94	76 45	18 40	72	1, 3	0
J95	76 46	18 30	117	1, 3	0
J96	76 46, 5	18 20	127	1	0
J97	76 56	18 25	69	1, 3	0
SØRKAPP-ISFJORDEN, *(area)* område IX					
J98	76 43	17 22	97	1, 3	0
J99	76 40	17 15, 2	75	3	0
J100	76 39	17 20	79	3	0
J101	76 35	17 17	52	3	0
J102	76 33	17 20	83	3	0
J103	76 29	17 20	100	3	10
J104	76 26	17 12	44	1, 14, 13	1
J105	76 25, 8	17 14	80	3, 9	30
J106	76 24, 5	17 01	60	7	30
J107	76 22	17 05	124	1, 6	48
J108	76 19, 5	16 52	93	3, 9	71
J109	76 19	16 35	85	1, 4	238
J110	76 21	16 30	56	1	0
J111	76 26	16 22	74	4, 1	7

STASJON *STATION*	POSISJON N *POSITION*	E	DYP *DEPTH*	BUNN *BOTTOM*	ANT. SKJELL # *SHELLS*
J112	76 17	16 20	104	0	164
J113	76 19	16 05	88	1, 4	17
J114	76 21	16 10	74	1	20
J115	76 23	16 15	55	1	0
J116	76 23	16 00	72	12	16
J117	76 21, 5	15 48	97	1	112
J118	76 21	15 44	120	1	30
J119	76 22	15 40	108	1, 12	7
J120	76 23	15 50	96	13, 1	640
J121	76 25	15 50	87	0	0
J122	76 28	15 55	63	7	4
J123	76 29	15 50	60	13, 1	13
J124	76 29	15 39	124	1, 3	47
J125	76 32	15 35	70	1, 13	31
J126	76 33	15 42	63	7	33
J127	76 34, 5	15 35	69	1, 3	8
J128	76 33	15 25	112	1, 3	0
J129	76 35	15 13	89	1	240
J130	76 36	15 23	74	1, 5	24
J131	76 37	15 30	73	4, 7, 12	3
J132	76 38	15 39	49	7, 1	0
J133	76 40	15 30	47	1	0
J134	76 39	15 23	66	1	4
J135	76 38	15 15	61	3	0
J136	76 37	15 03	89	1, 3	320
J137	76 36	14 52	82	1, 3	8
J138	76 40	15 07	77	1	240
J139	76 40, 5	15 17	55	1	1
J140	76 41	15 25	46	1	7
J141	76 44	15 25	37	13	0
J142	76 43, 3	15 15	70	..., 3	8
J143	76 43	15 05	110	1, 3	78
J144	76 47	15 05	100	1, 3	78
J145	76 50	15 11	93	1, 3	2
J146	76 51	14 52	75	13	3
J147	76 48	14 41	100	1, 3	12
J148	76 46	14 30	75	11	78
J149	76 45	14 19	90	1, 3	23
J150	76 47	14 04	100	1, 3	0
J151	76 48	14 13	100	1, 3	5
J152	76 49	14 21	50	1	0
J153	76 51	14 33	103	1, 3	5
J154	76 53	14 17	109	1	0
J155	76 55	14 27	108	1	2
J156	76 56	14 10	100	1	6
J157	76 57	14 18	122	1, 3	0
J158	76 59	14 13	72	1	59
J159	76 59	14 25	112	6, 3	0
J160	76 57, 5	14 40	114	3	0
J161	76 58	14 53	135	3	0
J162	77 00	15 07	80	1, 14	0
J163	76 58, 5	15 25	128	1	0

STASJON *STATION*	POSISJON N *POSITION*	E	DYP *DEPTH*	BUNN *BOTTOM*	ANT. SKJELL # *SHELLS*
J164	77 01	14 52	105	1,3	0
J165	76 58	14 00	100	1	4
J166	76 59,5	13 45	130	9	3
J167	76 59	13 30	101	1	0
J168	77 02	13 58	90	1,3	17
J169	77 03	14 13	56	1	0
J170	77 06	14 08	52	1	0
J171	77 05	13 50	160	1,3	0
J172	77 08	14 00	90	1	25
J173	77 09	13 47	72	1	44
J174	77 08	13 34	107	1,3	128
J175	77 09	13 11	102	1,3	0
J176	77 11	13 23	95	3	18
J177	77 12	13 44	79	1	5
J178	77 13	14 00	44	1	1
J179	77 13	13 50	48	1	0
J180	77 13,30	13 30	100	1	11
J181	77 13	13 18	109	1	0
J182	77 15	13 25	102	1	3
J183	77 15	13 40	64	13	0
J184	77 17	13 54	38	13,8	0
J185	77 20	13 48	42	13,1	0
J186	77 18	13 37	62	13,1	0
J187	77 18	13 20	155	0	0
J188	77 21	13 15	130	1	2
J189	77 21	13 25	59	1	2
J190	77 21	13 36	41	1	0
J191	77 25	13 20	100	1	36
J192	77 27	13 36	120	1,12	18
J193	77 30	13 46	115	1,4	160
J194	77 34	13 55	90	1	24
J195	77 35,1	14 12	108	0	0
J196	77 37,1	14 25	158	3,9	0
J197	77 34,5	14 32,5	97	9,3	0
J198	77 33,8	14 40	105	9,3	0
J199	77 36,9	14 42,2	94	9	0
J200	77 42	14 30	96	1,3	1
J201	77 43	14 10	115	0	0
J202	77 39,5	14 10	152	3	0
J203	77 41,5	14 00	103	1	8
J204	77 41	13 41	52	13,9	0
J205	77 36	13 40	155	3	0
J206	77 39	13 25	65	8	0
J207	77 39	13 10	96	1,3	6
J208	77 35	12 52	85	1	1
J209	77 34	12 35	100	1	2
J210	77 31	12 36	104	1,9	1
J211	77 28	12 23	87	1	1
J212	77 30	12 21	80	1	0
J213	77 30	12 05	100	1	0
J214	77 32	12 07	112	1	4
J215	77 32,30	12 21	93	1	0

STASJON *STATION*	POSISJON N *POSITION*	E	DYP *DEPTH*	BUNN *BOTTOM*	ANT. SKJELL *# SHELLS*
J216	77 37	12 22	121	3,1	0
J218	77 38	12 47	78	1	5
J219	77 40	12 47	115	1,3	2
J220	77 42	12 33	95	0	0
J221	77 43,8	12 52	95	1,3	2
J222	77 46	12 41	95	1	0
J223	77 45	12 25	100	1	0
J224	77 46	12 15	80	1,9	0
J225	77 46	11 55	85	1,3	1
J226	77 48	11 40	103	1	0
J227	77 49	11 25	95	1	0
J228	77 50	11 12	100	1,3	2
J229	77 53	11 15	99	1	0
J230	77 53,8	11 35	90	1,3	3
J231	77 54	11 55	60	1,12	3
J232	77 54	12 10	87	11,6	85
J233	77 56	12 25	83	1	1
J234	77 56	12 45	64	11,6	1
J235	77 59	13 03	75	1,13	0

INVENTORY STATIONS *FIELD area*

KARTLEGGINGSSTASJONER SØRKAPPFELTET, område IX

JK1	76 23	15 46	91	1	240
JK2	76 23,3	15 46	95	1	160
JK3	76 23,6	15 46	100	9,1	656
JK4	76 23,9	15 46	102	9,1	320
JK5	76 24,3	15 46	90	9,1	80
JK6	76 23,6	15 53	90	9,1	320
JK7	76 23,6	15 54	83	9,1	160
JK8	76 24,1	15 54	77	1	480
JK9	76 24,8	15 54	79	1	640
JK11	76 23,16	15 59	76	1	320
JK12	76 23,61	15 59	77	7	320
JK13	76 23,53	15 55,66	81	7	480
JK14	76 23,94	15 55,66	81	7	480
JK15	76 24,29	15 55,66	78	7	800
JK16	76 23,92	15 58,86	77	7	640
JK17	76 24,71	15 58,55	80	7	320
JK18	76 25,16	15 58,55	77	7	320
JK19	76 24,83	15 55,57	73	6	960
JK20	76 26	15 55,57	66	1,13	48
JK21	76 26,65	15 55,57	63	1,13	80
JK22	76 27,21	15 56,10	62	1,6	160
JK23	76028	15 56,25	67	4	1
JK24	76 28,5	15 56,4	58	4,9	0
JK25	76 27,3	15 45,4	112	1	80
JK26	76 26,7	15 47,3	97	1	160
JK27	76 26,7	15 50,3	88	1	160
JK28	76 26,7	15 53,5	82	9,1	480
JK29	76 26,7	15 53,9	80	9,1	480
JK30	76 26,6	15 57,6	75	9,1	160
JK31	76026,3	15 58	68	4	160

STASJON STATION	POSISJON N POSITION	E	DYP DEPTH	BUNN BOTTOM	ANT. SKJELL # SHELLS
JK32	76 26,8	15 53,8	52	1	0
JK33	76 26,6	15 57,3	47	1	0
JK34	76 23	15 55	95	0	0
JK35	76 22,55	15 55	104	0	320
JK36	76 21,37	15 52,95	92	4	640
JK37	76 20,05	15 55,31	109	3	130
JK38	76 19,44	15 52,71	120	1	0

PHOTO STATIONS FIELD, area
FOTOSTASJONER SØRKAPPFELTET, område IX

STASJON STATION	POSISJON N POSITION	E	DYP DEPTH	ANT. SKJELL/M2 # SHELLS/M2
JF1	76 20,95	15 55,99	89	6.9
JF2	76 21,42	15 56,05	88	5.1
JF3	76 21,73	15 58,57	74	3.1
JF4	76 22,01	16 03,98	70	0.9
JF5	76 22,38	16 02,43	65	0
JF6	76 23,19	16 00,29	64	0
JF7	76 23,62	15 58,48	67	1.1
JF8	76 24,3	15 57,2	64	1.6
JF9	76 24,5	15 57,2	62	0.3
JF10	76 25	15 58,7	50	1.1
JF11	76 25,2	15 56,01	53	3.9
JF12	76 25,2	15 15,4	58	0.9
JF13	76 25,8	15 56	65	1.2
JF14	76 26,8	15 55,5	80	7.0
JF15	76 26,8	15 52,3	86	7.0
JF16	76 27,8	15 46,2	100	4.3
JF17	76 27,1	15 49,3	86	4.4
JF18	76 27,2	15 46,57	97	6.4
JF19	76 26,10	15 52,23	85	5.2
JF20	76 25,8	15 49,6	82	4.8
JF21	76 24,6	15 49,6	84	5.4
JF22	76 24,5	15 51,4	87	6.9
JF23	76 23,35	15 53,15	93	3.6
JF24	76 23,03	15 56,64	87	2.6

Expedition #3

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Tokt nr. 3 (area)
MOFFEN, område I

STASJON *STATION*	POSISJON N *POSITION*	E	DYP *DEPTH*	BUNN *BOTTOM*	ANT. SKJELL *# SHELLS*
M100	80 18,3	14 25,6	62	1,2	35
M101	80 21,4	14 23,8	81	1	0
M102	80 22,1	14 21,8	90	1	0
M103	80 17,4	14 23	45	1,2	65
M104	80 15,4	14 21	60	1,2	66
M105	80 13	14 20	57	2,1	160
M106	80 11	14 16	43	2,1	135
M107	80 09	14 14	36	2,14,5	13
M108	80 07,3	14 18,8	23	1	1
M109	80 05	14 22	19	11,17	0
M110	80 18,89	15 12,24	35	2,14,1	100
M111	80 19,6	15 16,3	72	11	10
M112	80 05,6	15 00,7	60	14,2	4
M113	80 02,1	14 55	70	14,2	9
M114	79 59,2	14 41,6	56	14,2	0
M99	79 53,9	14 35,7	87	1	36
M115	79 56,2	14 34,7	85	1	41
M116	79 51,3	14 34,4	70	14,2	300
M117	79 58,2	14 33,9	50	14,2	220
M118	79 59,0	14 34,9	30	14,8	0
M119	79 59,1	14 23,8	31	14,8	4
M120	79 57,5	14 23,4	54	0	0
M121	79 58,9	14 09,5	70	14,8	2
M122	79 59,4	14 13,2	32	1,14	1
M123	80 01,3	14 06,7	33	3,8	2
M124	80 01,3	14 03,6	55	8,18	1
M125	80 03,3	13 59,6	31	14,8,18	1
M126	80 03,1	13 52,5	72	8,14	0
M127	80 05,2	13 55,5	27	1	47
M128	80 05,2	13 47	74	8,14	23
M129	80 07	14 00	32	14,1	230
M130	80 07	13 49,7	33	14,19	56
M131	80 07	13 38,3	68	14,2	225
M132	80 09	13 27	71	14,11,2	200
M133	80 09	13 38,7	41	3,1,2	50
M134	80 09	13 46,4	39	14,1	219
M135	80 09	13 57,5	42	14,20,2	65
M136	80 11	14 04	46	14,8,1	65
M137	80 11	13 52,5	43	14,1	150
M138	80 10,7	13 63,3	43	1,11,14	80
M139	80 11	13 23,5	74	14,21,1	40
M140	80 13	13 15,4	71	1	25
M141	80 13,5	13 30,5	50	1,2	250
M142	80 13,4	13 42,6	54	1,2	800
M143	80 13,0	13 56,8	56	1,14	320
M144	80 12,9	14 10,0	58	8,4	43
M145	80 12,8	14 36,1	44	14,2,1,3	150
M146	80 12,7	14 49,6	28	2,1	9
M147	80 15	14 51,6	32	11,22,2	53

STASJON STATION	POSISJON N POSITION	E	DYP DEPTH	BUNN BOTTOM	ANT. SKJELL # SHELLS
M148	80 15,1	14 38,4	46	1,2	350
M149	80 15,4	14 10,1	60	1,2	26
M150	80 15,4	13 56,2	66	1,2	138
M151	80 14,9	13 43,1	60	3,1,2	118
M152	80 14,8	13 30,0	70	1,3	146
M153	80 14,9	13 16,7	63	3,12,1	50
M154	80 17	14 08,1	69	1	0
M155	80 17	14 36	44	1,14,18	200
M156	80 17	14 47,7	38	14,1	150
M157	80 17,2	14 59,3	30	1,2	350
M158	80 17	15 11,0	22	1,8	5
M159	80 19	15 00	28	1,21	28
M160	80 19,2	14 48,8	38	11,2	500
M161	80 19,1	14 36,9	50	11,2	500
M162	80 19,1	14 12,3	65	1	10
M163	80 21,4	14 32,3	50	1	150
M164	80 21,5	14 47,6	34	1,14	900
M201	80 19,5	14 55,5	32	11	64
M202	80 19,5	14 31,9	52	2	170
M203	80 133,9	14 14,8	54	11	17
M204	80 11,7	14 10,8	47	11	67
M205	80 14	14 01,5	53	14,11,4	266
M206	80 16,6	13 51,5	73	1	10
M207	80 11,9	13 33	53	1	149
BREIBOGEN,	(area) område II				
B100	79 56,2	12 58,9	73	1,12	22
B101	79 56,2	12 52,2	81	1,12	17
B102	79 59	12 44,6	85	1,12	14
B103	80 00	12 35,1	84	4,1	276
B104	80 01,2	12 17,7	43	4,1	388
B105	80 02,5	12 09,9	56	4,1,14	736
B106	80 00,9	12 03,3	41	14,4	104
B107	79 59,7	12 12,6	40	14,2	118
B108	79 59,4	12 25,4	39	14,1,4	285
B109	79 58,5	12 36,3	51	14,1	202
B110	79 50,8	12 43	38	14,4	43
B111	79 56,2	12 49,3	32	0	1
B112	79 54,2	13 00	70	14,4	63
B113	79 53,6	13 14,3	29	1,19	55
B114	79 53,3	13 05	65	1,4,14	42
B115	79 52,6	12 59,5	39	1,4,14	330
B116	79 51,6	12 53,6	30	1,19	9
B117	79 50,7	12 48,5	40	19,1	40
B118	79 49,9	12 48,6	31	1	39
B119	79 49	12 31,7	70	1	0
B120	79 50	12 35,4	11	22	32
B121	79 51,1	12 38,7	42	1,2	138
B122	79 50,8	12 33,7	39	1	260
B123	79 52	12 31	35	1,2	20
B124	79 54,4	12 36,3	30	1,11	20

STASJON *STATION*	POSISJON N *POSITION*	E	DYP *DEPTH*	BUNN *BOTTOM*	ANT. SKJELL *# SHELLS*
B125	79 56	12 36	30	1, 19	225
B126	79 57	12 27, 3	32	1	272
B127	79 58	12 17, 3	39	1, 14, 4	220
B128	79 58, 8	12 02, 8	38	1, 14, 4	111
B129	80 00	11 53	50	1, 14	761
B130	79 59	11 50	35	14	54
B131	79 58	11 39, 6	62	1, 14	324
B132	79 57, 2	11 55, 3	37	1, 14	72
B133	79 57, 3	12 04, 7	47	1, 14, 4	224
B134	79 55, 5	12 00	59	3, 1, 4	70
B135	79 54, 5	12 09, 6	37	1, 14, 4	82
B136	79 55, 9	12 17, 3	35	14	71
B137	79 55	12 26, 3	32	1	14
B138	79 53, 3	12 17, 6	31	4, 1	72
B139	79 56, 2	11 44	66	4	716
B140	79 56, 3	11 33	56	1, 23	78
B201	79 56, 9	12 51, 2	54	1	477
B202	79 56, 3	12 39, 6	30	1, 19, 14	107
B203	79 58, 6	12 41, 4	56	14, 4	45
B204	79 59, 3	12 30, 3	45	14, 4, 1	234
B205	80 00, 8	12 25, 9	53	14, 4	426
B206	79 58, 8	12 21, 5	35	14, 4	112
B207	80 00, 8	12 14, 7	42	1	56
B208	79 59, 9	12 00, 4	42	14, 4	36
B209	80 02, 9	12 03, 7	57	14, 4	45
B210	80 01, 6	11 54, 8	72	1	120
B211	78 59, 4	11 42, 7	34	13, 14	5
B212	79 58, 3	11 32, 6	47	1	5
B213	79 56, 7	11, 29, 2	45	1, 24	0
B214	79 57	11 40, 7	70	1, 4	408
B215	79 57, 8	11 47, 2	69	4, 1	540
B216	79 58, 2	11, 58, 5	51	1, 4	360
B217	79 55, 5	12 05, 6	69	11, 22	8
B218	79 56, 8	12 14, 5	34	22, 19	110
B219	79 56	12 25, 3	36	4, 25	58
KLOVNINGEN, *(area)* område III					
K143	79 54, 8	10 48, 7	62	11	156
K144	79 54, 6	10 54, 3	46	1, 20, 24	7
K145	79 55	10 55	74	4, 8	7
K146	79 55, 7	11 02	41	8, 4	0
K147	79 54, 7	11 05, 8	43	4, 8	36
K148	79 55	11 11, 8	57	1, 4	35
K149	79 54, 6	11 18, 1	40	13. 24, 5	0
K150	79 53, 8	11 25, 3	50	2, 26	15
K151	79 54, 7	11 27, 5	43	6, 24	0
K152	79 54, 3	11 34, 9	41	27, 4, 24	4
K153	79 52, 9	11 35, 3	58	1, 2	820
K201	79 54, 2	11 25, 4	44	14, 4	50
K202	79 54, 9	11 24	72	14, 4	12
K203	79 54	11 17, 3	42	1	4

STASJON STATION	POSISJON N POSITION	E	DYP DEPTH	BUNN BOTTOM	ANT. SKJELL # SHELLS
K204	79 55,3	11 09	65	14, 4, 28	11
K205	79 55,6	10 55	63	4, 8	5
K206	79 54,7	10 58,2	32	24, 28	5
NORDGATT, (area) område IV					
N157	79 51,8	11 00	105	1, 3	0
N158	79 51,4	10 53,5	78	1, 14, 4	400
N159	79 51,4	10 48	24	1, 19, 8, 20	2
N160	79 50,4	10 48	51	1, 8, 14, 4	348
N161	79 50,4	10 54	39	19, 8, 14	25
N162	79 50,4	10 58	77	1	262
N163	79 49,3	10 58,5	80	1, 14	342
N164	79 49,3	10 52,5	65	14, 4, 8	82
N165	79 49,3	10 47	41	8, 4	9
N166	79 48,5	10 53	50	8, 4, 14	166
N167	79 48,5	10 55,9	57	8, 4, 14	23
N201	79 50,7	11 03,8	116	1	2
N202	79 49,7	10 55,5	55	14	55
SJUBREFLAKET, (area) område V					
S117	79 09,5	11 00	60	1	285
S118	79 11,5	10 59	33	1, 8	7
S119	79 13,5	10 54	30	1, 11	0
S120	79 15	10 50	49	1	8
S121	79 17 6	10 45,9	29	1	0
S122	79 19,5	10 45,0	45	11	2
S123	79 21,5	10 40,3	34	14, 22	0
S124	79 25	10 39,9	33	14, 11	0
S125	79 24,9	10 28,9	43	14, 8	6
S126	79 29	10 28,6	31	13, 8, 14	0
S127	79 28,4	10 20,7	39	1	4
S128	79 28,4	10 08,9	77	4, 14	73
S129	79 28,5	09 57,6	92	1	23
S130	79 29,4	09 46,3	94	1, 2	65
S131	79 32,5	10 08,3	72	4	504
S132	79 32,9	10 20,2	47	1, 4	39
S133	79 33	10 30	32	14, 13	0
S134	79 37,2	10 39	26	8, 19	0
S135	79 37,2	10 30	51	1, 8, 14	96
S136	79 37,2	10 18	58	1, 4, 14	164
S137	79 40,2	10 26	51	1, 4, 14	42
S138	79 44,2	10 30	45	10	1
S139	79 48	10 34	42	1	7
S140	79 51,7	10 42	46	1, 24, 20	1
S141	79 53	10 46,5	45	1	19
S142	79 53,5	10 41	68	1	14
S154	79 53,9	10 43,9	50	1, 2	60
S155	79 53,9	10 42,8	60	1, 2	157
S156	79 53,8	10 39,2	70	1, 2	116

STASJON *STATION*	POSISJON N *POSITION*	E	DYP *DEPTH*	BUNN *BOTTOM*	ANT. SKJELL *# SHELLS*
S168	79 51,9	10 39,6	63	1, 4, 14	8
S169	79 49,8	10 35,2	61	1	292
S170	79 48,1	10 29,6	61	1, 4, 14	96
S171	79 46,6	10 26,2	59	1	14
S172	79 44,3	10 28,6	66	10	28
S173	79 42,2	10 24,3	60	7, 1	59
S174	79 40,7	10 20,7	62	10, 4	45
S175	79 37,5	10 26,3	60	4, 14	74
S176	79 36,5	10 32,6	60	4, 14	44
S177	79 35,3	10 37,8	71	1	28
S178	79 37,9	10 55,5	60	1, 26, 24	7
S179	79 38,9	11 01,1	40	4, 24	24
S180	79 39	10 15,5	50	19	12
S181	79 39	10 11,5	67	1	68
S182	79 37,2	10 08,3	70	1	2
S183	79 37	10 12,9	48	13	14
S184	79 37	10 17,9	58	1	24
S185	79 37	10 22,7	48	2, 8	0
S186	79 35	10 20,7	54	13, 2	16
S187	79 35	10 12,3	63	1	26
S188	79 34,7	10 02,1	96	1, 5	5
S189	79 33	10 06,5	71	13, 14	17
S190	79 32,9	10 15,4	58	13, 14	1
S191	79 33	10 24,3	43	11	0
S192	79 30,9	10 15,6	50	14, 4	4
S193	79 31,1	10 10,9	57	14, 4	12
S194	79 30,9	10 06	71	1, 4, 14	460
S195	79 26,8	10 05,5	66	1,	0
S196	79 27	10 14,7	70	14	4
S197	79 27	10 22	51	1, 14, 4	148
S198	79 25	10 31,3	45	14	0
S199	79 25	10 27,3	50	14	1
S200	79 25	10 20,5	6[illegible]	1, 4, 14	114
S201	79 23	10 26,9	63	1, 4, 14	168
S202	79 23	10 32	60	14	21
S203	79 23	10 36,4	44	11	1
S204	79 21	10 35,5	45	0	0
S205	79 21	10 31,4	70	4	210
S206	79 21	10 25,8	76	1, 2	164
S207	79 19	10 41,6	51	1	4
S208	79 16,9	10 44,4	48	11, 2	27
S209	79 17	10 39,7	72	13	0
S210	79 15	10 45,5	74	11	59
S211	79 15	10 51	46	11, 4	102
S212	79 13	10 53,2	53	11	17
S213	79 12,9	10 49,5	84	11	27
S214	79 10,8	10 57,3	71	1	164

STASJON *STATION*	POSISJON N *POSITION*	E	DYP *DEPTH*	BUNN *BOTTOM*	ANT. SKJELL *# SHELLS*
MITRAGRUNNEN område VI					
S100	79 08,4	10 18,9	43	1	0
S101	79 10,7	10 16,7	43	1	0
S102	79 12,9	10 19,5	103	1	0
S103	79 14,2	10 00	143	1	16
S104	79 11,9	10 00	83	1	4
S105	79 10,4	09 59,9	62	11	7
S106	79 08	09 59,9	57	1	1
S107	79 06	09 59,9	47	1	2
S108	79 03,8	09 59,8	43	1	0
S109	79 04	09 38,7	57	1	1
S110	79 04,4	09 28,5	65	1	25
S111	79 04	09 17	82	1	104
S112	79 03	09 21	93	1,12	18
S113	79 04,5	09 23	73	1,12	98
S114	79 06	09 39	70	1	26
S115	79 08	09 39	84	1	12
S116	79 10	09 39	83	1	6
FORLANDSUNDET, *(area)* område VII					
F100	78 50,4	11 21	41	1,14	124
F101	78 49,9	11 26,4	53	1,3,4	1
F102	78 48,7	11 26,3	37	11,8,14,4	0
F103	78 47,9	11 29,9	36	1,3,4	0
F104	78 46,9	11 29,2	30	1,3,4	1
F105	78 46	11 25,7	48	3	0
F106	78 47,6	11 23,9	40	11,14,4,8	13
F107	78 48	11 15,5	67	1,14,4	19
F108	78 49	11 22	33	1,14,4	112
F109	78 49	11 16,7	77	1,8	45
F110	78 48,9	11 10,5	76	28,4	0
F111	78 47,9	11 12,2	50	14,11,4	56
F112	78 50	11 17,4	66	14,1,4	200
FORLANDSFLAKET, *(area)* område VIII					
F101	78 54	10 07	50	1	0
F102	78 54	19 59	52	0	0
F103	78 52	09 49,7	78	1	9
F104	78 52	09 55,7	67	1,8	19
F105	78 52	10 01	60	2	81
F106	78 52	10 06,3	54	1	17
F107	78 52	10 11,6	48	10	0
F108	78 50	10 15,3	60	1,4,14	14
F109	78 50	10 10,3	52	1,4,14	9
F110	78 50	10 05,7	59	1	38
F111	78 50	09 59,4	74	1	15
F112	78 48	09 56,7	69	10	0
F113	78 48	10 03	64	1	50
F114	78 48	10 08,4	61	1,4,14	19

STASJON *STATION*	POSISJON N *POSITION*	E	DYP *DEPTH*	BUNN *BOTTOM*	ANT. SKJELL *# SHELLS*
F115	78 48	10 13,1	56	11	19
F116	78 48	10 18,2	34	13	0
F117	78 45,9	10 21,3	35	14	0
F118	78 46	10 16,1	58	11	19
F119	78 46,2	10 10,1	59	1	30
F120	78 46	10 05,5	67	13	0
F121	78 46	10 00,3	75	1	27
F122	78 46	09 55,3	81	1	69
F123	78 43,9	10 04	75	1	18
F124	78 44	15 09,2	74	1	12
F125	78 44	10 15	64	11	89
F126	78 44	10 20,1	61	1	86
F127	78 44	10 25,1	38	13	0
F129	78 42	10 29,9	47	1	9
F130	78 42	10 22,3	62	1	22
F131	78 42	10 17,2	61	1	7
F133	78 40	10 23	80	1	27
F134	78 40	10 28,1	69	11	5
F135	78 40	10 34,4	42	11	7
F136	78 36,9	10 27	138	11	1
F137	78 38	10 19,2	109	11	0
F138	78 36	10 39	59	11	19
F139	87 34	10 36,7	67	11,8	7
F140	78 34	10 43,1	55	11,8	16
F141	78 34	10 47	36	11	0
F142	78 32	10 44,5	50	1,4,20	78
F143	78 32	10 50,3	40	0	0
F144	78 30	10 46,7	71	0	3
F145	78 30	10 51,7	44	11	2
F146	78 28	10 51,8	44	1	11
F147	78 28	10 55,6	31	0	1
F148	78 26	10 55,2	75	11	1
F149	78 26	11 03	33	11	1
F150	78 21,9	11 06,8	60	11	24
F151	78 20	11 20,3	60	11	101
LEXRYGGEN, *(area)* område IX					
L101	77 54,6	12 25	57	11	0
L102	77 54	12 09	89	4,1	43
L103	77 52,9	12 20,5	37	10	0
L104	77 50,8	12 18,3	46	1,7,8	0
L105	77 50,7	12 09,8	55	11,4,8	1
L106	77 49,7	12 09,6	63	11,4,8	6
L107	77 51,5	11 59,6	60	11,6,4,8	2
L108	77 51,6	11 49,4	57	11,8,4	0
L109	77 49,3	12 00,1	71	11,8,4	2
L110	77 49,6	11 48,9	73	1,4,8	3

HOPEN- EDGEØYA, (area) område XI

STASJON *STATION*	POSISJON N *POSITION*	E	DYP *DEPTH*	BUNN *BOTTOM*	ANT. SKJELL *# SHELLS*
R100	76 00	21 53	44	7, 8, 11	0
R101	76 00	22 08	43	14, 1, 8	0
R102	76 00	22 24	65	29, 14, 1, 8	1
R103	76 00	22 40	64	29, 14	4
R104	76 00	22 55	59	29, 14, 1	3
R105	76 00	23 14	49	29, 14, 8	0
R106	76 00	23 28	48	29, 14, 1	0
R107	76 00	23 45, 1	51	7, 14, 1	1
R108	76 00	24 02, 1	72	7, 14, 1	0
R109	76 00	24 17, 2	70	14, 1, 4	17
R110	76 04	24 21, 8	69	1, 14, 7, 4	17
R111	76 04	24 05	65	1, 14, 7, 4	41
R112	76 04	23 47	49	7, 1, 4	0
R113	76 04	23 28, 7	52	14, 1, 7, 4	3
R114	76 04	23 11, 7	50	14, 1, 4	0
R115	76 04	22 52, 8	52	2, 14, 1	3
R116	76 04	22 35	69	14, 1, 7	74
R117	76 04	22 16, 8	66	14, 2, 8	4
R118	76 04	21 58	65	4, 14, 8	6
R119	76 08	22 11	85	1, 4, 14	3
R120	76 08	22 27, 4	64	4, 14, 1, 8	54
R121	76 08	22 44, 8	54	4, 14, 1	7
R122	76 08	23 02, 4	44	4	0
R123	76 08	23 21, 1	44	7	0
R124	76 08	23 36, 9	45	1, 14	0
R125	76 08	23 56	50	11, 7	0
R126	76 08	24 15	64	1, 14, 4	14
R127	76 08	24 33, 1	71	1, 14, 4	12
R128	76 12, 1	25 48, 1	99	3, 1	1
R129	76 12	24 52	75	14, 1, 4	6
R130	76 12	24 32, 9	63	1, 14, 4	7
R131	76 12	24 14 9	59	14	1
R132	76 12	23 56, 8	58	1, 4	1
R133	76 12	23 40	59	4, 1	1
R134	76 12	23 22	47	11, 4, 14	1
R135	76 12	23 04	55	7, 4, 14	0
R136	76 12	22 47	46	7, 4, 14	0
R137	76 12	22 29, 9	67	4, 1, 14	8
R138	76 12	22 12	92	1, 4, 14	4
R139	76 12	21 54	97	1, 4	3
R140	76 16	22 10	111	1, 3	0
R141	76 16	22 30	78	1, 4, 3, 14	10
R142	76 16	22 50, 2	54	1, 14, 8, 4	12
R143	76 16	23 09, 2	49	1, 14, 4, 8	2
R144	76 16	23 26	55	1	4
R145	76 16	23 48, 2	55	1	1
R146	76 16	24 14, 3	60	1, 10	1
R147	76 16	24 38, 4	55	10	0
R148	76 16	24 58, 2	68	1, 14, 21	4
R149	76 16	25 17, 2	82	1, 3	5

STASJON STATION	POSISJON POSITION N	E	DYP DEPTH	BUNN BOTTOM	ANT. SKJELL # SHELLS
R150	76 20	25 32	83	1, 10	6
R151	76 20	25 12, 3	67	4, 14, 8	10
R152	76 20	24 55	62	4, 14, 1	7
R153	76 20	24 37	55	4, 14, 1, 8	12
R154	76 20	24 18	52	14	1
R155	76 20	24 00	63	4, 14, 1	6
R156	76 20	23 40	77	1, 14, 4	2
R157	76 20	23 22	60	1, 14, 4	4
R158	76 20	23 04, 5	55	4, 1, 14, 4	14
R159	76 20	22 43	68	4, 1, 14	18
R160	76 20	22 28, 3	99	1, 3	0
R161	76 24	22 55, 2	100	1, 3	15
R162	76 24	23 16, 8	92	3, 1	4
R163	76 24	23 37	81	1, 3, 8	6
R164	76 24	23 57, 3	62	1, 14	4
R165	76 24	24 20, 4	54	1, 14	8
R166	76 24	24 38	50	7, 1, 8	8
R167	76 24	24 58	53	8	0
R168	76 24	25 20	63	7, 1, 14	23
R169	76 24	25 40	73	7, 11	24
H100	76 28	25 15	46	5, 1	0
H101	76 28	25 31, 2	54	4, 14, 1, 5	0
H102	76 28	25 56	78	1, 3	0
H103	76 28	26 15	76	1, 4	1
H104	76 28	26 38	78	11, 3, 4	0
H105	76 28	27 05	108	3	0
H106	76 32	27 06	90	3, 11	0
H107	76 32	26 45	86	1, 3	0
H108	76 32	26 2[illegible], 9	79	1, 8	0
H109	76 32	26 01, 8	69	1, 8	0
H110	76 32	25 39, 8	44	10	0
H111	76 32	25 20	27	5, 1	0
H112	76 36	25 30, 2	26	1, 25	0
H113	76 36	25 50, 1	44	18, 25	0
H114	76 36	26 12	65	3, 1, 8, 25	3
H115	76 36	26 33	81	3, 1	0
H116	76 40	26 47	84	3, 1	2
H117	76 40	26 27	75	1	1
H118	76 40	26 05	53	1	0
H119	76 40	25 45	32	5, 1, 23	0
H120	76 44	26 28	82	1, 3, 4	5
H121	76 44	26 06	54	21	0
H122	76 44	25 45	32	1, 14	0
H123	76 44	25 22	30	7, 23	0
H124	76 44	25 01	33	11, 5, 8	0
H125	76 44	24 39, 8	35	11, 5, 8	0
H126	76 44	24 20	44	14, 1	1
H127	76 44	23 54, 8	51	14, 11	0
H128	76 44	23 35	80	1, 5, 3	23
H129	76 44	23 13, 8	141	0	0
H130	76 49, 5	23 17	110	21	0
H131	76 49, 5	23 41	69	1, 14	108

STASJON *STATION*	POSISJON N *POSITION*	E	DYP *DEPTH*	BUNN *BOTTOM*	ANT. #	SKJELL *SHELLS*
H132	76 49,5	24,03,1	41	7,1		3
H133	76 49,5	24 25,4	29	23		0
H134	76 49,5	24 47	36	1,23,8		0
H135	76 49,5	25 09	47	1,14		1
H136	76 49,5	25 35	51	1,14,4,8		3
H137	76 49,5	25 53	56	1,14		0
H138	76 49,5	26 16	66	1,8		0
H139	76 49,5	26 36	90	11,3		0
H140	76 55	26 25	102	11,3		0
H141	76 55	26 05	68	11,4,8		3
H142	76 55	25 45	65	11,4,8		1
H143	76 55	25 25	60	1,7		1
H144	76 55	25 02,9	55	1,7		3
H145	76 55	24 42,8	30	1,8,14		0
H146	76 55	24 24,8	34	1,14,8		1
H147	76 55	24 02,9	59	1,14,8		19
H148	76 55	23 39,9	84	1,?,14		0
H149	76 55	23 19,8	90	1,19,14		12
H150	76 55	22 59,6	92	1,3		5
H151	76 55	22 18	59	1,3		0
H152	76 55	22 01,7	40	1,14,5		0
H153	77 00	22 45	80	1,3		0
H154	77 00	23 05	100	1,3		0
H155	77 00	23 20	105	1,3		0
H156	77 00	23 40	83	1,4		16
H157	77 00	24 05	54	1,11,4		10
H158	77 00	24 28,1	39	1		0
H159	77 00	24 48,2	48	1,14,4		16
H160	77 00	25 10,2	50	1,14,4		9
H161	77 00	25 33,2	58	1,14		4
H162	77 00	25 55,2	65	1,14		1
H163	77 00	26 20,2	91	1,3		0
H164	77 05,2	26 00,4	92	1,3		0
H165	77 05,1	25 34,1	61	1,3		11
H166	77 05	25 10	62	1,3		5
H167	77 05	24 48	61	1,3,11		0
H168	77 05	24 26	64	11,4,8,3		0
H169	77 05	24 04	74	3,1		0
H170	77 05	23 42	96	3		0
H171	77 05	23 21	98	3,1		0
H172	77 05	22 55	84	4		0
H173	77 10	23 02	59	10		0
H174	77 10	23 25	107	3,1		0
H175	77 10	23 52,2	92	3,1		0
H176	77 10	24 17,3	81	1		0
H177	77 10	24 42	69	1,8		5
H178	77 10	25 05	74	1,8		2
H179	77 10	25 27,1	80	0		0
H180	77 15	25 28	81	3,1		0
H181	77 15	25 05	72	3,1		0
H182	77 14,7	24 42	65	3,1		0
H183	77 15	24 20,9	65	1		0

STASJON *STATION*	POSISJON *POSITION* N	E	DYP *DEPTH*	BUNN *BOTTOM*	ANT. SKJELL *# SHELLS*
H184	77 15	23 58	90	3, 1	0
H185	77 15	23 38	99	3, 1	0
H186	77 15	23 16, 3	66	1, 8, 20	0
H187	77 19	23 30	90	0	0
H188	77 19	23 50, 2	72	3	0
H189	77 23	23 40, 2	59	3	0
H190	77 23	23 57, 3	49	1	1
H191	77 26	24 17	49	11, 14, 28	1
H192	77 29, 3	24 38	65	1, 3	0
H193	77 33, 5	24 28	48	1, 3	0
H194	77 37	24 37	51	3, 1, 4	0
H195	77 41	24 45	79	0	0
H196	77 44	24 55	90	3, 1	0
H197	77 48	24 50	28	1	0
H198	77 51	24 44, 7	37	1	0
H199	77 54, 1	24 56, 4	92	3	0
H200	76 40	24 32	34	28, 14, 20	0
H201	76 40	23 54	59	4, 14, 19	0
H202	76 40	23 33, 9	82	1	7
H203	76 36	23 43, 2	94	28, 21	0
H204	76 36	24 02	55	mistet skrapa	0
H205	76 32	23 55	53	1	2
H206	76 32	23 39, 9	77	1, 14	13
H207	76 32	23 19, 9	103	1, 14, 4	0
H208	76 28	23 38	98	1, 14	0
H209	76 28	23 54	74	1, 14	0

PHOTO STATIONS

FOTOSTASJONER

MOFFEN, (area) område I

STASJON STATION	POSISJON N POSITION	E	DYP DEPTH	ANT. SKJELL/M² # SHELLS/M²
MF1	80 18,8	15 12,3	33	3.1
MF2	80 18,8	15 00,2	29	0.7
MF3	80 15	14 51,7	31	2.5
MF4	80 12,7	14 49,3	28	0.9
MF5	80 17	14 36	47	9.6
MF6	80 19,1	14 12	71	1.4
MF7	80 16,9	14 07,8	66	5.0
MF8	80 15	14 23	53	6.8
MF9	80 12,8	14 36,9	45	2.1
MF10	80 13	14 10,2	58	-
MF11	80 15	13 43,3	59	10.9
MF12	80 13,4	13 30,4	51	14.0
MF13	80 13	13 15,2	71	0.5
MF14	80 11	13 24	75	6.4
MF15	80 09	13 27	71	7.9
MF16	80 09	13 39,6	40	7.1
MF17	80 09	13 57,7	40	8.8
MF18	80 07	13 49,4	32	3.4
MF19	80 07	14 00	34	10.2
MF20	80 03	13 59,6	27	0.6
MF21	80 15,5	13 46,1	65	11.4
MF22	80 14,9	13 52,1	65	3.2
MF23	80 14,3	13 57	62	4.5
MF24	80 13,8	14 01,5	57	15.0
MF25	80 13,1	14 07,8	53	28.9
MF26	80 12,5	14 12,3	49	3.1
MF27	80 12,5	14 06,7	52	8.1
MF28	80 11,6	14 05,3	47	8.1
MF29	80 11,6	13 59,3	48	9.1
MF30	80 11,3	13 51,1	47	10.9

BREIBOGEN, (AREA) OMRÅDE II

BF1	79 54,3	12 36,5	31	0.6
BF2	79 58	12 52	83	2.5
BF3	79 55,9	12 36,7	29	0.2
BF4	79 53,3	12 17,4	32	4.3
BF5	79 56,1	12 18	30	0.7
BF6	79 58,5	12 36,2	56	7.1
BF7	80 00	12 35,2	85	1.6
BF8	79 59,7	12 12,3	41	3.1
BF9	79 59,9	11 53,1	46	0
BF10	79 58	11 43,7	73	3.9
BF11	80 00,9	12 26,4	70	12.7
BF12	80 01,4	12 16,5	54	20.7
BF13	80 03,2	12 01,8	64	2.6
BF14	79 58	12 02,1	53	4.5
BF15	79 57,4	11 43	59	14.1

NORGATTFELTET, (area) område IV

STASJON (STATION)	POSISJON N (POSITION)	POSISJON E (POSITION)	DYP (DEPTH)	ANT. SKJELL/M2 (# SHELLS/M2)
NF1	79 49,3	10 54,1	54	8.3
NF2	79 48,3	10 48	35	1.9
NF3	79 49,6	10 48,4	37	0.2
NF4	79 50,9	10 49	46	0.2
NF5	79 51,1	10 53,8	60	6.4
SJUBREFLAKET, (area) område V				
SF1	79 10,7	10 57,5	56	5.7
SF2	79 13	10 52,2	57	6.0
SF3	79 15	10 49	56	3.8
SF4	79 17	10 44,5	58	3.2
SF5	79 19,1	10 45,1	45	0
SF6	79 21	10 34,6	51	0.5
SF7	79 23	10 31,4	49	2.1
SF8	79 25	10 30,2	57	1.2
SF9	79 27	10 18,5	51	0.4
SF10	79 31	10 17	59	-